The Builder.

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ILLUSTRATIONS.

View from Tower, "Kincardine," Deeside.—Messrs. Niven & Wigglesworth, Architects ..... *Double-Page Photo-Litho.*
Shipton Hall.—Mr. H. E. Farmer, Architect ..... *Double-Page Ink-Photo.*
"Vectis Lodge," Edgbaston.—Messrs. Bateman & Bateman, Architects ..... *Double-Page Ink-Photo.*
Cottages, Heathwaite.—Messrs. Mawson & Gibson, Architects ..... *Single-Page Ink-Photo.*
House, Walton-on-Thames.—Mr. John Watson, Architect ..... *Single-Page Ink-Photo.*

Blocks in Text.

Diagrams of Plumbing Work ..... Page 479 | Ground Plan of Vectis Lodge, Edgbaston ..... Page 484
Central Building, Stockholm Exhibition ..... Page 485

CONTENTS.

Fireproof Buildings 473
Patents: Novelty and the First Inventor 474
Notes 475
Architecture at the Royal Academy 477
The Architectural Association 478
The Institution of Civil Engineers 482
Competitions 482
Association of Municipal and County Engineers 483
Kincardine, N.B. 484
Shipton Hall, Salop 484
Vectis Lodge, Edgbaston 484
Cottages, Heathwaite 484
House, Walton-on-Thames 484
Architectural Societies 484
Central Building, Stockholm Exhibition 485
An Exhibition of Posters 485
The London County Council 485
R.I.B.A. Elections 486
The Election of Fellows at the Institute 486
The Question of Examination in Architecture 486
The Student's Column: Specifications.—XXII. 487
Trade Catalogues 488
Obituary 488
General Building News 488
Sanitary and Engineering News 491
Foreign 491
Miscellaneous 491
Capital and Labour 492
Meetings 493
Recent Patents 493
Some Recent Sales of Property 493
Prices Current 495
Tenders 495

Fireproof Buildings.

THE importance of having reliable information upon the fire-resisting capacities of various forms of construction is becoming more and more apparent. The term "fire-proof" denotes a class of construction in which no structural member is combustible; but at the same time the fact is fully appreciated that fire may cause complete wreck without actual combustion of the structure. When we consider for a moment that during last year there were on the average three serious fires every week in London alone, causing the sacrifice of many lives, it is a subject for astonishment that so little has been done in this country to gain any useful knowledge as to the kind of construction best calculated to offer the greatest resistance to destruction from this cause.

Both in America and on the Continent much attention has been given to the subject, but the efforts of those interested have been mostly directed to carrying out experiments, generally on a rather small scale. Naturally a good deal of useful information has been gained in this way, but it would be much mor serviceable to examine the effects of the actual conflagrations that occur so frequently than to first cause a fire—which necessarily must be of limited dimensions—and then note its effect upon small specimens of girders and columns brought intentionally into contact with it.

It is to be regretted that when an extensive fire occurs the lessons it is capable of teaching us are practically ignored, and that while every effort is made to extinguish it, no attempt is undertaken to discover how the various parts of the building behaved during the conflagration. We are much in need of reliable information, presented in a scientific manner, as to the relative advantages of using cast iron, wrought iron, or steel for girders and columns, obtained from actual experiences. In addition to this the behaviour of the various forms of concrete floors, when subjected to fire, should be examined and recorded, as well as the value of protective materials, and many other matters of minor interest. The whole of this information is offered to us at nearly every large fire that occurs, and it is remarkable—considering the vast interests at stake—that no earnest attempt is made to profit by these occasions to gain some definite idea as to the best system of fireproof construction to adopt.

Any investigation of this nature would, of course, have to be undertaken with the permission of, and in conjunction with, the Metropolitan Fire Brigade, who no doubt would allow some authorised person, thoroughly acquainted with his duties, to examine the various parts of the so-called "fire-proof" buildings, after a fire, or as far as possible during its occurrence.

In this way architects and engineers would be furnished with a report upon the fire-resisting properties of various forms of construction, and would be in possession of reliable information, obtained from actual experience.

An attempt is now being made in America, as we see from Mr. S. A. Reed's very interesting communication to the "Journal of the Franklin Institute" last November, to obtain data concerning the fire-resisting properties of buildings composed of steel or iron columns and girders. A co-operative committee of three was formed a year ago, representing officially the principal associations of fire insurance underwriters, the Architectural League, and the American Society of Mechanical Engineers. This Committee has done little more so far than to construct its plant, and to make a beginning of its tests, but it will ultimately, we think, furnish us with some very valuable information.

The Committee proposes to investigate and examine in order of importance how fire affects:—

1st. The skeleton of a building;

2nd. The floor and roof arches;

3rd. Walls and partitions regarded as fire stops. It will also pay much attention to the effect of protective material or armour for steel or ironwork.

The varieties of fireproof construction have reference mainly to the various devices for floor arches spanning the space between the steel beams, and these are largely the subject of patent rights. A number of fire and water tests have already been made, and are still being made on floor-arches by those persons interested in them; but the investigation of the protection of the skeleton of a building has not called forth the activity of patentees, and the heavy expense necessary has prevented others interested in the subject from going very thoroughly into the matter. The Committee above referred to have, however, decided to pay particular attention to the stability of the steel framework of a burning building, and have decided to make their tests on a full working scale and under the actual conditions, as far as possible, which would obtain in a fire. They propose to use gas as fuel, and to work at three typical temperatures, these to represent three typical classes of ordeal that buildings are likely to be called upon to sustain according to their location and occupancy, and to test each to destruction if possible.

From the data that will be obtained the Committee hope to be able to state the requirements for a standard building, for the particular set of conditions, internal and external, which the building has to meet; and to be a standard, it must, of course, contemplate all fire possibilities, even the most remote, pertaining to these conditions.

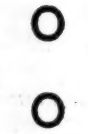
The testing plant was only completed in the early part of last year, but since that time several tests on unprotected columns have been made, the result of which we give in the table on the following page.

Even from the above few tests, it is evident that iron or steel must be covered by a sufficient thickness of some non-combustible material of slow heat-conducting quality, and having mechanical properties which are not seriously altered by high temperatures, if the buildings of which they form a part are to be preserved from destruction by fire.

This armour must be mechanically attached, so that neither heat, water, or falling objects can seriously impair it.

It is interesting to note that tests on cast-iron columns show that the popular idea that such columns shatter like glass when rapidly cooled by water is erroneous, and that apparently there is no particular choice between unprotected cast-iron and steel columns as to their fire value. Both yield by bending at a red heat about in the same manner, and eventually double up, although the cast-iron columns appear to continue to resist—that is, to retain their sustaining power throughout the period of bending; whereas the steel columns cease almost entirely to resist, and

STRENGTH OF COLUMNS SUBJECTED TO HIGH TEMPERATURES.

Section	—	Height of Col.	Breaking Load. Tons.	Working Load. Tons.	—
	Steel. 4 z bars, 4in. by 3⅜in. by $\frac{5}{16}$in. 1 plate 6½ in. by $\frac{5}{16}$ in. = 14·15 □	14 ft.	342	80	With a test load of 48 tons and a temperature of 1,200 deg. F., the column bent after 85 minutes.
	Steel. 2 c bars, 10 in. by 15½ lbs. 2 plates 12 in. by ¼ in. = 15·0 □	14 ft.	303	85	With a test load of 85 tons and a temperature of 1,125 deg. F., the column bent after 23 minutes.
	Cast Iron. 8 in. diameter 1 in thick =22□	13 ft.	—	90	With a test load of 85 tons and a temperature of 1,100 deg. F., the column bent after 70 min. (no water applied).
	Do.	Do.		Do.	With a test load of 85 tons and a temperature of 1,550 deg. F., the column bent after 35 min. (no water applied).

lose practically all their sustaining power as soon as buckling begins.

Within the last two or three years some valuable experiments have been made in Vienna, under the supervision of the City Surveyor, with the object of testing the efficiency of protection of ironwork against fire, and incidentally to determine the relative fire-resisting properties of various building materials.

A brick chamber, 12 ft. by 8 ft. and 11 ft. 6 in. high, was constructed, the walls being lined with various building stones and other materials. In the centre of this chamber was erected an iron column, consisting of two channel bars, 5½ in. by 2⅜ in., placed back to back, with a clear space between them of 2½ in., and cross-braced with small lattice bars. Test bars, composed of different alloys, melting at various points between 150° F. and 165° F., were placed in the space between the channels, and the column was subsequently inclosed in brickwork in mortar, unpointed, forming a pier 18½ in. square, the brick casing having a thickness of 6 in.

The building was covered with a fireproof roof, formed of tiles on wrought-iron joists, and concrete. The column was loaded to the extent of 14·4 tons, which was equivalent to 3¼ tons per square inch.

The fuel was piled equally all over the floor to a depth of about 3 ft., and the firing was maintained at its full intensity for two hours and a half, and then kept on one side of the building, with the object of testing the effect of unequal heating. The fire brigade then commenced playing upon the roof and inside walls and column; but the heat to be subdued was so intense that the interior of the chamber could not be examined until the following day.

It was then found that the corners of the brick pier were crumbled to the extent of 1¼ in. to 1½ in., and several roof tiles were split. The brickwork was wet throughout. Generally speaking, the walls remained vertical, and the iron column was quite uninjured. The test-bar fusing at the lowest temperature of the series (150° F.) was the only one in which there was any appearance of partial melting, so that it was evident that the brick casing was amply sufficient for the protection of the column. The brickwork surface stood very well, but most of the stones were honeycombed or granulated, and the plaster-surface afforded no resistance sufficient to be taken into consideration.

An interesting example of a large fire, from which considerable information respecting the stability of iron columns and girders subjected to intense heat was obtained, occurred a few years ago in Berlin. A large warehouse, recently erected and substantially constructed in stone and iron in the manner generally considered as "fire-proof," was destroyed in a very short time, in spite of every effort to save it. The opportunity was taken in this case to institute a complete and systematic official examination into the conditions under which the collapse and destruction of the building occurred, and the practical lesson to be learnt from the event.

The building, which was six stories in height, was a rectangular block 141 ft. long by 95 ft. wide, with a central courtyard. A substantial cross wall with iron doors separated the structure into two distinct parts. The floor girders, about 14 in. deep, were placed 8 ft. apart, and the ceilings were vaulted between them in the usual manner. The main girders were 18 in. deep, with a span of 17 ft., and rested on brackets on the cast-iron columns, being bolted end to end. The cast-iron columns bolted together through the several floors ranged in size from 9 in. diameter and 1⅛ in. in thickness on the ground floor, to 4⅜ in. diameter and ⅝ in. thickness on the top floor.

The fire was caused by some workmen upsetting a lamp on the third floor, and by the time the firemen arrived the flames had full hold of the building. The chief cause of the destruction of the building was the failure of the columns, and the consequent collapse of the floors, and although the flooring material itself was but little injured, the columns were nearly all more or less distorted. Of ninety-nine columns, twenty-two escaped injury, thirty-nine were injured, but remained standing; and thirty-eight disappeared from their places and were traced among the débris.

The result of the official examination was that the Committee recommended especially that the loads on all columns should be central as far as possible, and that lugs and brackets should be dispensed with wherever they can be avoided; that the ends of all girders should have sufficient free play for elongation and contraction; and that the connexions of girders over the columns should be strong enough (in case of necessity) to hold the flooring together, even if one column collapsed.

The above example furnishes an instance of an official investigation taking place after a large conflagration, and we think it must be admitted that until we adopt some such system ourselves, we shall make but little progress in the construction of really fireproof buildings.

PATENTS: NOVELTY AND THE FIRST INVENTOR.

THE interest in the question of patents becomes keener year by year. It is seldom that we are without some work on this subject before us. On the present occasion it is the full and complete book which was published by Mr. Lewis Edmunds in 1890, and of which a second edition is now issued.* There are many persons who prefer smaller books than this, but for a complete work the present cannot be considered unduly voluminous. It would not—for a standard work—be possible to be more concise, and the authors of this edition deserve credit for not increasing the size of the volume over that which was published seven years ago. For it is obvious that the field of patents grows annually wider, and even in a work which deals with general principles it is necessary to illustrate rules by copious examples.

The publication of this very complete book affords an opportunity for stating some of the results of legal decisions to the present date, which in the aggregate have formulated the principles by which the novelty of an invention is to be tested, and by which it may be discovered who is the first inventor. These are, of course, only two portions of the subject of patents, but they are of the first importance, and the fact that a large and well-defined body of law has now been created in these and other points of principle leads us to hope that occasion will soon be found for codifying the law of patents. Such a code would be of immense practical value, for in truth every inventor ought to know the general principles of patent law in the country where he contemplates the taking out of a patent. Such a code would also lead to a greater similitude of the law in different countries: on no subject is it more desirable that there should be international agreement.

It is the novelty of an invention which entitles the person who introduces it to the public to protection by means of a patent for a certain number of years. If the so-called invention is not new, the reason for its protection has gone. The public gets nothing in return for the monopoly which it grants to an individual. Want of novelty in an invention, if a thing which is known before may be called an invention, may arise from two distinct sets of facts. A so-called invention may be to all intents and purposes the same as one already known, or it may be that the state of general knowledge is such that persons conversant with the subject to which the so-called invention relates, would be able to make what is alleged to be an invention. It is impossible to state in detail the various ways in which a so-called invention may be similar to one which has gone before; the variety and number of modern machines is alone sufficient to show how each case must be considered on its own merits. But two divisions in principle may be formulated.

* The Law and Practice of Letters Patent for Inventions. By Lewis Edmunds, D.Sc., Q.C. Second edition by T. M. Stevens, Barrister. London: Stevens & Sons, 1897.

The invention may have been anticipated in fact; that is to say, the thing may have actually been manufactured. Or, again, it may be on paper; in other words, the idea may have been described, but it may not have been made into a working thing. But here we must bear in mind an important qualification. For "a prior description will not avoid a subsequent patent unless it be sufficiently clear to enable those conversant with the subject to produce the thing invented without any experiment or further assistance than can be got from the paper itself." Again, to elucidate the qualification itself "the description must be so clear that an intelligent workman reading it will deduce the invention and the way to make it." The late Mr. Justice Grove, who, in addition to being an eminent lawyer, was a distinguished man of science, has left us what may be called a definition of the "intelligent workman." It may be usefully reproduced: In a case once tried before him, the late Judge used these words, "persons versed in the trade, skilful, and well acquainted with the trade (I might even limit it, perhaps, to those in the trade who are most skilled); the higher class of skilled workmen." It will be seen from these two statements of principle upon what a comparatively clear basis the actual law on this point rests, and how easily it might be codified. The real difficulty arises when the principles have to be applied to troublesome facts.

We must now turn to the second main division which involves the question of the state of general knowledge. This is, perhaps, a more difficult part of the subject. It is well exemplified in a statement by the late Sir George Jessel, a lawyer of great breadth and acuteness of mind, "When you say a thing is known to the public and part of common knowledge, of course you do not mean that every individual member of the public knows it. What is meant is, that if it is a manufacture connected with a particular trade, the people in the trade shall know something about it; if it is a thing connected with a chemical invention, people connected with chemistry shall know something about it." The truth is, that this is a pure question of fact. Any person who has to decide the question must look at the circumstances of the time, the information of experts, the character of standard works, and other sources of knowledge, and he must ask himself whether, having regard to all these facts, the state of knowledge is such that the element of novelty is absent from the alleged invention.

Assuming that the invention is a novelty, is the claimant for the patent the true and first inventor? In other words, is he the real discoverer, for no other person is allowed to obtain this monopoly. This, of course, is a question of fact. One point may be emphasised, that in one sense the first inventor, in the eye of the law, to use an Irishism, need not be the first inventor in fact. That is to say, if something has been discovered by another, but the discovery has never been divulged, he who independently discovers the same thing and is the first to disclose it or to apply for a patent which is eventually granted, is the true and first inventor. The practical lesson from this rule is obvious. If a person reasonably believes that he has invented something new, he ought not to keep it to himself, but should apply as soon as possible for a patent. In these days, many active and ingenious minds are at work, more especially in mechanical affairs, and no one can tell how quickly some discovery by one man may not be followed by a similar one which has occurred to another person.

NOTES.

The Workmen's Compensation Bill.

AN important announcement was made by Mr. Chamberlain during the first night's discussion of the Workmen's Compensation Bill in Committee. He stated that it was intended that the building trade should be included in the Bill. As we pointed out when discussing the measure at length, some workmen engaged in building work appeared to be included, since the Bill applied, as originally drafted, to works where machinery was used. Sir Charles Dilke has an amendment on the paper to the effect that buildings which are over 30 ft. in height shall come within the Bill. This Mr. Chamberlain says will be accepted by the Government. But the amendment cannot stop there. At any rate, if it be limited in this respect at present, it is certain to be amplified at some future and not distant time. One thing, therefore, is clear from the recent discussions in Committee, and that is that the workmen and employers engaged in building work will come within the range of this measure.

South Kensington Museum.

IT is to be hoped that the Report of the Select Committee on the Museums of the Science and Art Department may have some influence in leading to the completion of South Kensington Museum. Neither Parliament nor the public care anything about the matter on architectural grounds, but the fact that the collection is in danger from fire, owing to the existence of so many temporary buildings of combustible material in connexion with it, may possibly lead to a conclusion that the completion of the building in a solid and monumental manner had better not be delayed. The following is the emphatic language of the Report of the Committee on this point:—

"That the principal structural alterations necessary for the protection of the collections from fire have not been made appears to be due to the fact that the completion of the permanent buildings of the South Kensington Museum has always been in the contemplation of successive Governments as the true remedy for the danger of destructions from fire which hangs over the collection so long as they have to be partly housed in the present temporary structures."

This necessity of providing buildings suitable for the exhibition of the objects of art and science collected at South Kensington has been long under the consideration of successive Governments. Your committee regard it as their immediate duty to lay before the House of Commons by means of an interim report their very strong opinion that permanent buildings for the adequate accommodation of the collections at the South Kensington Museum should be proceeded with without delay. They are of opinion that it will be a source of grave discredit to the country if the settlement of this matter, which has been the subject of consideration by Government for many years, and of endless correspondence between the departments concerned, is any longer delayed."

Mr. Preece on Electrical Transmission.

MR. PREECE read an interesting paper on Tuesday at the Engineering Conference on "The Transmission of Power by Electricity." He commenced by lamenting the energy running to waste in grinding stones, changing river beds, and carving the surface of the earth into hills and valleys. The utilisation of this energy at centres of civilisation would mean, he said, keeping permanent the face of nature; a way of looking at the matter which, in view of the recent agitation about the destruction of waterfalls for power purposes, caused considerable amusement. In regard to the utilisation of the Nile Cataracts, he said that it was perfectly possible to utilise this waste energy in Cairo and its neighbourhood, but we ought first to consider how the cost of doing this would compare with that of bringing fuel from England. The question of burning coal at the pit's mouth and then transporting the energy extracted as electric currents to London was in his opinion not worth considering at present. For workshop and home use electricity ought to be far more widely used in England, for although the horse was far more efficient than an electric machine in converting fuel into energy, yet the cost of its upkeep and its depreciation made it the least efficient of machines. We disagree with Mr. Preece when he says that dynamos and motors are now commercially made at moderate prices, with efficiencies of from ninety-four to ninety-six per cent. We never heard of a motor at a moderate price with an efficiency greater than eighty-five per cent.

Lord Leighton's House.

IT is to be hoped that the offer of Lord Leighton's house and its contents to the public which has been generously made by his sisters will be accepted, and that the people of Kensington will take measures to obtain sufficient funds to keep it up. It is very desirable that this should be a local matter. We hear a good deal at the present time of forming separate municipalities for various parts of the Metropolis. The real vitality of any such separate bodies must arise from local public spirit. The present is an opportunity for Kensington to show what it can do to maintain a home of art without going to the rest of London for financial assistance.

Annual of the "British School."

THE Committee of the British School at Athens have this year wisely decided to allow their "Annual" to be purchased by the outside public at the moderate price of half-a-guinea. The number contains, besides the report of the Managing Committee and a selection of papers read at the School, some very valuable communications which it is well to make as widely accessible as possible. We have, *e.g.*, a paper by Mr. Arthur Evans on Goulas in Crete, the "City of Zeus," of which there are remains above ground more extensive than those of any other prehistoric city on Hellenic soil. The paper is illustrated by a plan by Mr. Myres, and by eleven figures in the text. We can only here call attention to its paramount importance in relation to the whole "Mycenæan" question. Other important papers of special interest to architects are those on the Byzantine Churches of Melos, by Mr. Fletcher and Mr. Kitson, students of the School, and on the antiquities of Cyrene, by Mr. Weld Blundell. Some account is also given of the excavations at Melos, still in process, of which fuller particulars are to appear in the forthcoming

number of the *Hellenic Journal*. These preliminary reports appearing, as they can, with greater promptitude, fully in themselves justify the existence of the "Annual."

The Transmission of Power.

SEVERAL papers on the "Transmission of Power" were read last Tuesday before those members of the Institution of Civil Engineers who were able to attend the "Engineering Conference" which was held in the beginning of the week in Westminster. The transmission of power by water was dealt with by Mr. E. B. Ellington, M.Inst.C.E., and in the course of his remarks he pointed out that 75 per cent. of the power supplied at the central station ought to be realised over an area of four square miles, although, as the designs of the machines vary with the purposes to which the power is applied, the 75 per cent. may often drop very considerably. Dr. John Hopkinson, in treating of the transmission of power by electricity, drew attention to the fact that when transmission is to be made to long distances, as from where there exists a great water power to the points at which that power can be used, then electricity was the agent to be employed. It is inevitable that, with electrical transmission of power, high speeds of rotation must be used, and for many purposes this is inconvenient; for example for lifts and cranes working at a slow speed. But, notwithstanding the fact that there seems undoubtedly to be many places where hydraulic transmission will permanently be better suited to the purpose than electrical transmission, there can be no doubt that there are many cases in which, at the present day, hydraulic transmission is used which will ultimately be effected by electrical transmission of power—as, for instance, in our ships of war. The consequences of the destruction of a steam or water-pipe by a projectile would be extremely serious, whereas the breaking of the continuity of an electrical conductor would be easily and quickly made good.

Lord Kelvin on Contact Electricity.

LAST week's Friday's lecture at the Royal Institution by Lord Kelvin was a most important one. He began by showing an experiment which conclusively proved Volta's theory that when a zinc plate and a copper plate were put in contact, one became charged with positive electricity and the other with negative. Although he had shown this experiment fifty years ago at Glasgow University, yet an immense amount of ingenuity had been wasted recently in trying to explain away this phenomenon. He considered that Volta was absolutely right, and made an appeal to physicists to study Volta's work seriously. A very interesting and novel experiment was shown. A plate of uranium was connected to one terminal of an electrometer, and was then touched by a plate of aluminium. It was seen by the deflection of the spot of light that the uranium plate became at first positively electrified; it then gradually lost its charge and became negatively electrified. Lord Kelvin could suggest no explanation of this very mysterious experiment. Another interesting topic touched upon was Becquerel's discovery of the radiation given off by uranium. This radiation is very feeble, but photographs of coins, &c., taken by its means were thrown on a screen. He stated that it had been conclusively proved that this radiation was not due to phosphorescence, or the slow radiation of light previously absorbed, and he could give no explanation of it. Lord Kelvin was slightly discursive, but he was listened to most eagerly, and his points were rapidly taken up by an appreciative audience.

Actions for Obstruction of Light.

IT is surprising that by this time all points in regard to the law as to the obstruction of light have not been cleared up. On the contrary, from time to time, new ones spring up. Thus, for example, in the recent decision of Jenks *v.* Lord Clifden we find an important question settled. The so-called Civil Procedure Act of 1833 states that an action may be maintained against the executors of any person deceased for any wrong committed by him in his lifetime to another in respect to his property, real or personal, so as such injury shall have been committed within six months before such person's death, and the action is brought within six months after the executors have entered on their duties. Whether or not an action for obstruction of light could be brought under this section does not seem to have been decided until the recent decision of Mr. Justice Kekewich. This judge decided that, under the above statute, a person whose light is obstructed may bring his action against the representative of a deceased person just as if the latter were alive, but under certain limitations, which are that the damages for the obstruction must be confined to such as were incurred during six months preceding the death of what we may call the wrong-doer, and that the proceedings are brought within six months of the appointment of the executor the action is maintainable. From a practical point of view we may be inclined to doubt if it is worth going to law to recover damages in respect of an obstruction for six months, which can hardly be what lawyers would term substantial damages.

Water-supply Disputes.

MR. JAMES MANSERGH, Chairman of the "Waterworks, Sewerage, and Gasworks" Section of the Engineering Conference, read a paper before the Section on Tuesday last, entitled "The Law and Allocation of Underground Water." The communication dealt, principally, with a very interesting contest which has been going on before a Commons Committee within the last few weeks as to the rights possessed by the public in underground water. The Corporation of Newark have recently sunk a well into the pebble beds of the New Red Sandstone at Farnsfield and obtained a satisfactory supply therefrom; the Nottingham Corporation, desirous of increasing their water supply, sought to sink wells in a position regarded by the Newark authorities as being certain to cut off a portion of the water which, under ordinary conditions, would reach their pumping station. Other and minor public bodies were also interested in the matter; but it became practically a contest between the Newark and Nottingham Corporations. In the end, the Bill of the latter body was curtailed, and power was given to Nottingham to construct only a well many miles away from Farnsfield, the closer ones proposed being struck out; whilst the Newark Corporation, which sought by their Bill to secure a protective zone of four miles radius around their well, within which no other Authority should sink a well to obtain water to be taken away outside that area, succeeded in getting the boundary fixed merely by the present limits of supply. The decision may not be confirmed by the House of Lords, but it is interesting as showing the present muddled state of the law in reference to underground supplies of water, and the uncertainties attending "expert evidence." One of the principal points in the case was as to whether a certain stream had been to some extent dried up as a consequence of the pumping from the water-bearing strata for years in its neighbourhood, or whether it was due simply to natural causes. The evidence on this was most conflicting, and it is safe to assume that so little is at present known concerning the distribution and movement of underground water in that part of England that the evidence on either side was not worth much. We entirely agree with Mr. Mansergh that the question of the amount of percolation into ground of varying geological character requires a great deal more attention than it has hitherto received.

Russell Institution, Great Coram-street.

THIS Institute, latterly occupied as a club and reading-rooms, was closed a few days ago; the property, library, and other effects will shortly be sold. On the laying out of the Bedford and Foundling Hospital estates in the Long Fields, north of Bedford House and Montague House, James Burton, who was largely employed by Francis, and his brother John, Dukes of Bedford, projected the erection of a suite of assembly rooms. He obtained a ninety-eight years' lease from Michaelmas, 1799, at a ground-rent of 10*l.* per annum, of a site described as "part of the ground lately taken in exchange of the Foundling Hospital, and also part of the said Duke's private road" (Woburn-place). The interior was burnt in 1802; in February, 1804, the premises were opened under licence for music and dancing, the large room—75 ft. by 26 ft., and 30 ft. high—being appropriated to balls and concerts. As the speculation did not succeed, Burton proposed to establish a literary and scientific society after the mode of the Royal and London Institutions. Sir James Scarlett (Lord Abinger) and Sir Samuel Romilly were leading members of the committee, who gave Burton 2,700*l.* and 200 shares for his interest. Large sums have been expended from time to time upon the buildings; in 1812-3 the committee spent 2,500*l.* upon alterations and repairs, by Thomas Cubitt, under the direction of John Shaw, the architect. In 1825, E. W. Brayley, F.S.A., was appointed secretary and librarian. There is a large picture by Haydon of Xenophon and the Ten Thousand first seeing the sea from Mount Theches, exhibited in the Egyptian Hall, 1832. The then Duke of Bedford won the painting, valued at 800 guineas, in a raffle at the "Thatched House" Club, 1836, and presented it to the Institution. The west wing, originally the bath-rooms, and the vaults, have long been let to a firm of wine merchants.

Pennant's "London."

A FINE copy of this work was sold, for 335*l.*, at the recent dispersal, at Christie's, of the Bessborough Library. It forms one of the twelve copies that were printed on large paper; it is bound in six interleaved volumes, extensively illustrated with 2,070 engravings,

&c., collected by Lord Bessborough. The similar copy, also in six volumes, in the Soane Museum, was bought for 600 guineas at the sale of the effects of Fauntleroy, partner in the banking firm of Marsh, Sibbald, & Co., of Berners-street, executed for fraudulent transfers of stock on November 30, 1824. Another copy, after the same kind, but bound in several volumes, containing many valuable water-colour drawings, and known as the Crowle Pennant, is in the Prints Department, British Museum.

Architecture and the Press.

THE daily papers of Thursday offered a characteristic example of the attitude of the daily Press (of London especially) in regard to architectural questions. Some of them gave a long report of the evidence of Mr. Shaw Lefevre on Wednesday before the Government Office Sites Committee. At the same sitting two architect witnesses, one of whom had given special attention to the subject, gave evidence at considerable length; but the evidence of architects on such a subject is not of course worth reporting.

ARCHITECTURE AT THE ROYAL ACADEMY.—III.

DOMESTIC architecture is not largely represented among the Academy drawings of the year, and not by the design of any house of the first order of importance; in fact, the majority of the designs exhibited are for small houses, bungalows, or lodges. Generally speaking, the collection, as far as it goes, tends to show that the prevalence of English taste in house architecture is increasingly in favour of simplicity and quiet picturesqueness of treatment. This is a good deal better than the gewgaw domestic architecture so prevalent in France and Germany; though it may be questioned whether we are not going too far in the direction of mere picturesqueness; and there are some little contrivances for obtaining it—a window formed in an outer angle of the wall, a window on a curved plan appearing to support an overhanging floor or eaves over it, &c.—which are becoming commonplaces, and have almost lost their power to attract attention.

Scarcely any of the designs for houses show plans, and those which do show no compass indication. The question of aspect of rooms is so all-important in a dwelling-house that it is extraordinary how architects can go on, year after year, exhibiting drawings of houses without providing any means by which any one can judge whether they are well-planned or well-arranged houses, or whether the picturesque of the design and grouping is or is not at variance with practical requirements.

The best drawing among the domestic architecture exhibits is Messrs. Niven & Wigglesworth's view of a portion of the house named "Kincardine," Deeside (1,930), which was illustrated more fully in the *Builder* some little time since, and as this is obviously only intended as a view of a picturesque angle of the house for the sake of a picture, it may be admitted that in this case a plan was hardly necessary. The present drawing is among our illustrations in this issue. The picturesqueness is obtained, though the portion of the house shown here is, it must be admitted, a little too much of a mere imitation of Scotch castellated Gothic. Another of the larger drawings exhibited is that of Shipton Hall (1,834), by Mr. H. E. Farmer, which is also published among our illustrations of this week; but it appears from the interesting communication from the architects under the head of "Illustrations," on another page, that this is an old building to which the architects have merely been making some repairs and a few slight additions. The drawing conveys the impression of an old building, no doubt, but the habit of getting up drawings of modern houses so as to make them look like ancient buildings is so common nowadays that one can never take a drawing as a criterion on this point without further information. It is a pleasing representation of a very picturesque old house.

Mr. Ravenscoft's "House and Stabling at Maidenhatch" (1,821) is one of the larger drawings, and shows a L-shaped brick house with chimneys and dressings of darker or redder brick, and a large block of stabling with a tower near to it; the drawing is a landscape with a house in it rather than an architectural drawing, and the house has not much character, though the plan might afford more matter for interest if we had one. Mr. Aston Webb exhibits a large pen-and-ink drawing of the "Additions to Paddockhurst, Sussex" (1,836), with a small sketch plan. The additions consist of a dining room and a winter garden, the latter with its length placed across the plan, and marked by angle turrets, between which a little decorative effect is got by a balcony with open tracery on either side and a solid panel with a sundial in the centre, the dial flanked by two bas-relief figures. Beyond this building extends a long conservatory which has the unusual merit of being treated at the sides with solid buttresses and arches so as to appear a part of the architecture of the house, instead of being, as a conservatory in general is, a mere wood and glass excrescence. This is altogether a good piece of work.

Mr. J. J. Stevenson's "Houses in South-street, Mayfair" (1,825: no plan) have a dignified appearance and a certain special character owing to the introduction of semi-octagon bays built of stone, at each angle, the intermediate portion of the walls being of brick. These bays are connected above the ground floor by a balustraded balcony, the corbels carrying which, in the left-hand house at all events, look too small and weak for good architectural effect. The houses have very high green-slated roofs, which give character, but are not the best kind of provision to make for attics. Of somewhat the same class of work, though with less character, are Mr. Neale's "Houses erected at Hampstead" (1,786: no plan).

Messrs. Bateman & Bateman's "Vectis Lodge," published in the present issue, is one of those drawings which hardly require a plan, as it is really only a billiard-room—the interior and the two sides. As explained under the head of "Illustrations," the large bay window had its origin in the practical necessity of giving more space for playing. The interior of the room, with its panelled wainscotting and the decorative frieze above and the open beams and joists, has a good solid effect.

Some other minor examples of domestic architecture may be noticed in the order of hanging. Mr. Doran Webb's "County Hotel, Salisbury" (1,749) is a picturesque country town hotel, though the projecting chimney breast on the upper portion of the front looks rather awkward. Mr. Paxton Watson's "First Lodge, Lea Park" (1,754) is a very pleasing specimen of a Park Lodge, the circular turret with its small cupola roof looks however as if it ought to have been carried a little higher to clear the general roof line. Mr. Garner's "New House at Hampstead" (1,755) is a queer bit of house architecture with mullioned windows inserted in large spaces of the wall, and the entrance flanked by columns which carry nothing, a use of this feature which looks rather as if the architect wanted to put something there and did not quite know what else to put. None of the three last-named drawings show plans. "An Artisan's Room" (1,763), by Mr. Barry Parker, is praiseworthy as an attempt to put a little interest into a cottage room with a stair ascending at one side of it. In Mr. R. A. Brigg's "House at Quarry Woods, Marlow" (1,776), we come at last to a plan, but we regret that it is not a very satisfactory one; the hall and passage upstairs must be deficient in light, and the plan shows the barbarous arrangement of the water-closet in the bath-room, which ought not to be tolerated in the most unambitious residence. The house is picturesque, but shown in a very roughly-executed pencil drawing; though, as we have always said, architectural exhibits ought not to be chosen mainly for drawing, architects might take a little more trouble as to drawing than is shewn in this and some other house drawings of the year, some of which are little more than rough sketches.

Mr. Larner Sugden's "Hillmorton House, Rugby" (1,791: no plan), we illustrated recently; a good deal of picturesque character is obtained by the free and varied lines assumed by the wall terminations. Messrs. Silcock & Reay's "Country House, Bath" (1,789), has a sketch plan but no names to the rooms; apparently the three principal sitting rooms are placed *en suite* and facing the same way (there is no compass), which is rather a naïve manner of planning. The house is one of the larger ones illustrated, and has some good points architecturally; it is a solidly designed stone house with mullioned windows, and with the back entrance door at an outer angle, oddly emphasised by three short thick columns supporting the walls over it and leaving small porch between them. Mr. Voysey's "House near Guildford" (1,797) is a really interesting and picturesque little building, treated in a peculiar manner, the walls all white (rough-cast?), roofs of green slates, and the window dressings and mullions of apparently a warm-tinted yellowish stone, but the drawing, which has fully drawn-out plans, is hung too high to be properly examined or for the plans to be understood. Why an evidently carefully executed piece of work like this should be skied, while drawings of the roughest description are put on the line, is one of the inexplicable mysteries of hanging in the architectural room. Mr. Redfern's "Gatehouse and Master's Lodgings, Abingdon School" (1,805) also has plans and is also too high to be seen. In "The Living Room, Woodcote, Church Stretton" (1,814), Messrs. Parker & Unwin show an interior with a good deal of character, with a large boldly treated ingle nook, though there is a little of that affectation of plainness and solidity and unadorned brickwork which is a fashion set by some of the American house architects, and is capable of being overdone. Mr. Sydney Perks's "House near Banstead" (1,817: no plan) is a pretty country house, the two round arches (door and window) make an effective basement for the half-timber gable above them. Mr. Watson's "House at Walton-on-Thames" (1,862) we give an illustration of; it is a picturesque little nest, and for a small house the plan is well arranged. Mr. F. W. Bedford's "Shireoak Dene, Headingly" (1,864: no plan), is a good little water colour showing a house in the old plain brick style with white painted wood-work, very well carried out in its way. Mr. Seth-Smith's "New House at Eastcote, Pinner" (1,869: no plan) shows a characteristic contrast of red brick and white surface in the walling, with an accompaniment of clipped hedges, &c.; a little too much affectation of old fashion about it, the long square chimney growing out of a set-off reminding one of the sketches in "Harding's first drawing book." Among other things we can only just mention Messrs. Hesketh & Stokes' "Billiard Room, Piggott's Manor" (1,880), a room with a segmental plaster ceiling with a large Elizabethan strap pattern over it, and columns screening off the dais; Mr. Allen's "The Mount, Cookham" (1,886; no plan), a pretty water-colour of a brick and timber building; Messrs. Niven & Wigglesworth's "Nethercliffe, Walton-on-Thames" (1,901; no plan) a very plainly treated shingled house with a long roof-ridge, and the end treated with half timber work; Mr. Briggs's "House at Crowborough" (1,908), a much better plan than the other, with a good deal of originality in architectural treatment and disposition of the rooms; and Mr. Vigers's "Rowgardens Wood" (1,912; no plan) a plain house with a certain amount of character, and diversified with a well laid out formal garden in front of it.

Among the houses illustrated in the Academy there is a good deal of picturesqueness and pleasing character exhibited; but it is much to be regretted that we have not drawings of more important works in domestic architecture, of which there must be many going on. And we must emphatically repeat that an illustration of a dwelling-house without a plan is no illustration at all.

IN PARLIAMENT.—On the 18th inst. was read for the first time a Bill to authorise the acquisition of Churchyard Bottom Wood, Highgate, for purposes of an open space and recreation ground. The Ecclesiastical Commissioners offer to sell the fifty-two acres of woodland for 25,000*l.*, provided it be preserved as an open space. Towards that sum the residents around have subscribed about 3,000*l.*, the Middlesex County Council have voted a sum not exceeding 5,000*l.*, provided that Parliamentary powers be obtained to enable them to do so, the Local Board has voted 10,000*l.*, and the Islington Vestry 2,000*l.*—A Select Committee have passed the Bill for a railway, seven miles long, at an estimated cost of 219,193*l.* to join the London and North-Western at Watford with the Great Northern at Edgware, and having a branch line to the Midland at Mill Hill. Mr. Woodall's Committee have passed as "proved," the preamble of a Bill to empower the Metropolitan District Company to make an underground railway, mostly beneath their existing line, from Earl's-court station to the Mansion House, at a cost of 1,700,000*l.*, to be worked by electricity, or cable, or steam-power, 500,000*l.* being appropriated to electrical works.

fitted up that it may be used with absolute safety in any position or place it may reasonably be required, either outside or inside a house? Well, gentlemen, if I could not answer that question in the affirmative, I should not be here to-night.

Living on an island, we naturally believe in isolation. We isolate all clean water pipes such as safe-wastes, cistern wastes, and overflow pipes, by making them discharge into the open air. We also isolate all dirty water waste pipes, such as bath wastes, sink wastes, and lavatory wastes, by exposing their discharging ends to the air outside the house, and in this matter we stand ahead of all other nations, not excepting even America. In some cases, we also isolate soil-pipes, by "disconnecting" them from old and filthy soil drains, safeguarding them from the air in the drain, and giving to each soil pipe a separate inlet and outlet for continuous ventilation.

We go further than this, for we not only isolate the drain of one house from that of another, by disconnecting both from the common sewer, but in some cases we disconnect one section or wing of a building from that of another, excluding any infected air which may be in one section from another, and providing independent ventilation to each section, taking care, however, that no length of drain shall remain unventilated.

And we not only isolate the main carriers, the sanitary wings are now isolated from the general building. And the water-closet apartments are not only isolated, but the water-closets. The "Corbel" and the "Bracket" closets have been specially introduced to isolate them from the floor as well as from the walls, an illustration of which is now before you (fig. 3).

But isolation is not everything; our ships of war still count for something. A water-closet may be as isolated as a sentry-box, and yet be dangerous, for in this sanitary age no water-closet can be pronounced sanitary in the highest degree which cannot be used and left in itself and in all its parts as clean and wholesome as it was before usage.

To compare various points and features of the great variety of water-closets and flushing-cisterns which now exist would require several evenings, and to attempt this to-night would only tend to the confusion of our minds on a subject simple enough in itself, but which, owing to the multifarious patterns of the many manufacturers, has become a little complicated.

In passing over many water-closets which have been introduced during the last ten or twenty years we shall not miss much, for the majority of them are as noisy and as unsightly as some of the new motor-cars, and to the olfactory nerves are just as objectionable as the pan-closet they were meant to supersede. I propose, therefore, to confine my remarks to a few kinds, viz., the valve-closet, the "Syphonic," the "Wash-down," and the "Wash-out," but before doing so let me mention the several points which I consider essential to a good water-closet.

1. It should hold a body of water large enough and deep enough to quite submerge the fæces.

2. It should have no parts or places in it where fæcal matters could cling to or accumulate upon.

3. It should have a water-seal of at least 1½ in. for trapping off the soil-pipe.

4. It should be so constructed that the whole of its contents may be changed by a flush of two gallons of water, and its interior parts well washed.

5. And in the case of earthenware closets having their basin and trap in one piece, its connection with the soil-pipe or drains should be readily seen.

Now if we examine the general kind of "wash-*out*" closets, we shall see that they all more or less fail in some one or more of these important points. In the majority of such closets, if not in all of them, it will be found that the water held in the bottom of the basin is too shallow to cover the fæces, the consequence being that the portion which is not submerged throws off a vapour—its temperature being generally greatly higher than the air of the apartment—which soon fills the place with an odour, objectionable to the then occupier, and most repulsive to the next comer immediately following. So pronounced is this, that on making an examination it is rarely necessary for a sanitarian to do more than put his head into an apartment where this kind of closet is fixed, to know that it is a "wash-out."

Then in this kind of closet the flush of water is made to break up the fæces in the best possible way for throwing their odours into the apartment, and instead of spending its full force upon the sides of the basin and upon the trap, it is chiefly spent in clearing the bottom of the basin. There is also the evil of a large exposed surface between the weir of the basin and the water-seal of the trap, a part which will generally be found to be in a filthy state.

Having dismissed the "wash-*out*" kind of closet, let us now see what can be said for its next of kin, the pedestal "wash-*down*" kind. There is a very great variety of them with several points common to them all, and yet they differ so much in certain essential features that, like Jeremiah's figs, "the good are very good indeed, the rest are not fit for pigs." In one particular they all stand at a disadvantage with the "wash-out," viz., that their exposed surface of water is smaller. But the best of their kind may be said to pretty well embody the points required in a good general sanitary water-closet. They are to be had of many a manufacturer, each one claiming some feature or advantage not possessed by others.

In the example before you my assistant will soil over the whole of its interior exposed surface and will test it with a dozen pieces of paper, using only two gallons of water, and you will see that the closet and trap will be left free of the matters put into them. And as it is more difficult sometimes with such closets to wash out a few pieces of paper of the size of postage stamps, he will try it again and show you that the closet stands both tests equally well.

Several varieties of "Syphonic" closets are now in the market, the main object with them all being to provide a larger exposed surface of water than can be given to the "wash-down" kind: but though such closets excel the "wash-down" closets in this particular, they are not so satisfactory in some other points. The majority are not so simple, nor so reliable in their action with only a two-gallon flush of water, and some of them are complicated in their supply and discharge arrangements.

In testing such closets with a pailful of water emptied quickly into them, I have seen them left with a much reduced water-seal even when they have not been attached to a soil-pipe; and how they would withstand the action of syphonage when fixed in about the middle part of a stack of soil-pipe 80 or 100 ft. high, I should hardly like to say, but I should be apprehensive of the result.

I know of an instance where a syphonic closet was put into use during the time its soil-pipe was under a smoke test, and the smoke escaped through it into the water-closet apartment. But, perhaps, this is hardly to be wondered at, for under certain conditions, the contents of the closet are syphoned out very vigorously, so much so that the water-seal of the trap would often be broken in the action.

The emptying of a pailful of slops into such closets not only syphons out their previous contents, but the added slops as well, leaving the basins practically empty, in which state they would at times be used when the fæces would fall upon dry basins; for, no doubt, the servants would not always remember to pull the flushing handle after emptying the slops, especially as there would be no necessity to do so to get rid of the slops.

Then, unlike a valve-closet, the water held in the basin is in continuous contact with the air in the soil-pipe, but this is the same in "wash-down" closets.

Then I think when the water is limited to two-gallons it is important that the whole of such a flush should be utilised for washing down the walls of the basin and cleansing the trap; but in the majority of the syphonic closets it will be found that part of the flush is used for starting the syphon in a compartment outside the basin.

Then a close examination of the majority of such closets when in action will show that their sides are not properly rinsed, and that in consequence particles of matter are left adhering to the surfaces, and that even some of the rinsed water is returned back into the closet when the syphonic action has been broken. But, of course, a second flush would make this all right. It is better that such closets should have a flush of not less than about three gallons.

Before I pass away from the classes of water-closets which may, and which often are, connected to soil-pipes and drains by imperfect joints, I should like to say, as strongly as I can, that no closet or trap having a breakable outlet, such as earthenware, should be connected to a soil-pipe or drain in a manner that will not admit of a ready inspection.

I now come naturally enough to valve-closets, the prince of water-closets for private use, and for places where such a convenience is not used for several days together and when the supply of water is not limited to two gallons. The "Bramah" valve-closet was invented by Joseph Bramah, of London, in 1778, but it has been much improved upon since then, especially during the last ten or twenty years. In turning out some drawers recently, I came across a printed circular of a valve-closet, by the founder of my business, which was established upwards of a century and a-half ago, and I have thought it of sufficient interest to reproduce upon the screen to-night for you to see. It was printed by T. Bensley in about 1790, I think. His printing press was next to Dr. Johnson's house in Bolt-court. If you look at the type you will see that the long S is used, and the Caslon Foundry abandoned that form of letter in 1785.

The illustration shows a D-trap under the closet, but according to the text this trap was at that time called an "Air" trap; and although they seem to have preferred that its position should be immediately under the floor of the closet, they do not seem to have been very particular about this, for in the directions for fixing, it is specified to be "fixed under the floor of the closet, if the joists are of sufficient depth to allow it, if not it may be fixed at the *bottom of the funnel pipe*." It is interesting to notice that at this time soil-pipe was called "Funnel-pipe"—the name by which it is still called by some old plumbers—and, what is still more interesting, as shown by the circular, the conservatism of that day was very strong, for they stored the sewage in cesspools built at the bottom of funnel-pipes inside their houses. But they saw a danger in this, unless matters were well suppressed, for the specification states that "great care must be taken to make properly good round the bottom of the funnel-pipe where it enters the drain or cesspool so as to entirely prevent the foul air from being emitted." There is nothing said about the ventilation of the soil-pipe or of the cesspool, the authorities were content to "bottle up" such matters, and there was wisdom in this with so much storage of sewage in closet trap and cesspool.

But I must return to my subject. I have called the best kind of valve-closets the prince of water-closets, and I have done so because I know of no other which embraces so many good points. It has a larger and a deeper body of water than any other closet, for receiving a motion, submerging it, and carrying it away in what I have called elsewhere a "water envelope;" whilst the valve which keeps the water in the basin enables its sides to be so extended that they are practically protected from the dejecta, no matter what state the body may be in. And to protect the flushing rim of water-closets I have recently introduced a receding rim.

Then, with the attached supply valve, at the same moment of time the closet is discharged, a very vigorous flush of water is made to cleanse the whole of the interior of the closet together with its trap; and not only so, the sides of the basin are rinsed down at the same time, so that not a vestige of foreign matter may remain behind.

Then the valve-closet is superior to all other closets, whether of the "wash-out," "wash-down" or "syphonic" kind, in that its basin water—the water which is open to the apartment and the house—is separated from the water which stands in the closet-trap, in fact is "disconnected" from the water which is exposed to the air in the soil-pipe, as shown in section upon the screen, which is an illustration of a valve-closet which I have had specially made for fixing upon fire-proof floors, and places where it is desirable that the floor under the closet should remain intact.

There is also another great advantage attending a good valve-closet, viz.: with an efficient lead trap under it having a wiped soldered joint to the lead soil-pipe there will ever be a reliable connexion with the soil-pipe, and a reliable water-seal; so reliable that the trap and its jointing may be depended upon for many generations.

In the case of earthenware closets with earthenware traps in one piece—the pedestal kind—or in two pieces, it is not so; for there is not only the risk of a breakdown of the connexion with the soil-pipe, but there is also

the risk of the breakage of the closet itself, its trap or its basin part, which would mean a defective water-seal or no protection at all from the soil-pipe air, pending the changing of the closet for a new one.

I know that some authorities have been content to fix valve-closets without a trap between the closet and the soil-pipe, but it is astonishing what may be done in the name of sanitation. Now, though something may be said in favour of fixing a valve-closet without a trap on a very short length of soil-pipe, which has its discharging end open to the air, what can be said in favour of such a closet fixed upon a long length of soil-pipe into which other valve-closets discharge with no trap to any of them? And yet scores have been so fixed. Only within the last few months I know of such cases where the closets have had to be re-sanitated.

I will not insult you by arguing in favour of fixing traps under water-closets—that is a sound principle conceded by us all; but I shall be glad of your attention whilst I demonstrate the fact that a round pipe-trap—the syphon trap, the kind often fixed in ignorance of its behaviour—under certain circumstances loses its water-seal, and for a time ceases its work of safeguarding the house from the soil-pipe, and perhaps the drain as well. It seems a waste of words to say that if a trap be necessary at all it should be of that kind which could be relied upon under any condition to which it would be liable.

With a round-pipe or syphon trap the discharges pass through it in so unbroken a form and with so much momentum—gained in the fall from the closet basin—that the combined action of syphonage and momentum is not arrested in time to leave sufficient water in the trap to re-seal it.

With an "Anti D-trap," as I shall show you by one or two tests, the water is just sufficiently broken up at the outlet of the trap to retard both the action of momentum and syphonage, for ensuring the retention of an efficient water-seal, no matter how small or how large a body of water may be sent through it, whilst to ensure an entire change of the previous contents of the trap its body part is purposely made smaller than its inlet; and as it holds about 40 per cent. less than a 4-in. syphon-trap I need hardly say which is the more wholesome of the two, although both kinds may be considered as self-cleansing. By the favour of the Worshipful Company of Plumbers I have here an apparatus which the company fitted up at King's College in connexion with their museum and workshops there, for the extension of the technical training of student plumbers. I have had a photograph taken of the apparatus, and before demonstrating will show it upon the screen.

Next to the importance of an efficient trap to a water-closet is an efficient water supply, for the best closet in the world may not only be marred, but may be ruined by the want of either. To expect two gallons of water to carry a motion through the closet, trap, branch soil-pipe, the vertical stack, and a long length of branch drain to reach the main carrier, and not leave a vestige of filth behind, is expecting too much. The fact is, if the water flush is to be efficient it must be made to depend somewhat upon circumstances, upon the necessities of the case, and that only where water is scarce, or where it is imperative to economise its use in order to maintain a general supply to the house, should it be limited to two gallons.

Two gallons of water with an efficient flushing cistern may fairly suffice for the best kind of wash-down pedestal closets with small water areas, when they are situated near to the main carriers with a general flow of water in them, or into which copious flushes are automatically and frequently delivered. But two gallons of water are insufficient for water-closets which hold a good body of water, especially when they stand or are fixed at any great distance from the main drain, that is, if the soil-pipes, drains, and ventilating-pipes are all to be kept clean and wholesome. In my own house—I pay by meter—I have valve-closets for the best closets with the water supply so arranged that each user may give a flush of two, three, or four gallons very rapidly and at pleasure, and during the thirteen years that I have occupied the house I have never had to pay extra on that account. I say this to encourage Water Companies in giving a larger licence to consumers.

As only, however, two gallons of water are allowed by most Companies, it is most important that this quantity should be utilised in the best possible way, and as there are flushing-cisterns *and* flushing-cisterns, only the most efficient should be used. You all know well enough what difference there is in their discharging power; I have here one taking not quite *five* seconds to discharge, the size of the flushing pipe being 1¼ in. and the cistern being nearly noiseless. With a noisy advertiser in a house, it is vain for any person to pretend he only left the room to get a pocket-handkerchief. Such fittings are most unpleasant to retiring dispositions, and they ought not to be fixed in private houses. I was dining a month or two ago at a friend's house, and wishing to give a second flush to the closet, I waited four minutes by my watch for the flushing cistern to fill; when I left it was still filling, and I dare say by this time it is ready for the second flush.

A properly-fitted valve-closet with an attached supply-valve and bellows regulator, is the least noisy of all water-closets, and when it is so fitted up that the lid of the enclosure can be put down before the handle is pulled, it is practically noiseless in its action. The next slide will show a view of such a closet It is so arranged in my house, where, for the sake of convenience and for good general flushing when necessary, the service to it is taken from the general service-pipe to other fittings. When this is properly done I do not see how any contamination can take place, but as it is most difficult to always rely upon things being properly done, it is better to separate the water-closet supply from all other services. When the cistern for this purpose would have to be fixed in the water-closet apartment it should be kept as small as practicable, holding only about half a dozen gallons of water, so that its entire contents may be frequently changed, for, notwithstanding any lid it may have, the effluvia of the apartment would gain access to the water and taint it. Where a good flush is desired, and the head of water would be under 5 ft. or 6 ft., the service-pipe to the closet should be of 2-in. bore.

If we were not influenced by fashion, or carried away by the current of things, I should wonder much why pedestal closets with narrow ring seats ever came into vogue for the best closets in private houses, especially for ladies' use, for I suppose the least observant must know that it is cleaner and nicer for a lady's dress, especially with a long skirt, to rest upon the dusted seat of an enclosure rather than upon the floor, remembering what closet floors are like at times. With a table-top closet basin protecting the enclosed space, and with an air-tight joint to the top of a nicely-fitted enclosure, as shown upon the screen, not only is the vapour excluded from the space inside the enclosure, but dust, and the sweepings of the apartment, as well. And with such an arrangement no cold draughts can blow upon the person using the closet. And even for the use of men, when they are feeble or advanced in years, a table-top pedestal closet affords a better means for raising themselves from the closet than the ring-seat, allowing them, as it does, a firm place to rest their hands upon, as shown by the closet illustrated upon the screen.

Before leaving the subject of water-closets, I ought to say something on the apartments in which they are fixed, though there is no time for more than a word or two. The apartment in itself, apart from the closet, may become an accumulator or disseminator of disease. Dark and dangerous water-closet apartments may be found with the aid of a candle in the interior parts of old mansions with no natural light or ventilation. The vapour generated in them, or escaping from the closet apparatus, may be as difficult to remove as air out of a bottle.

One side of a water-closet apartment should at least stand next the external air, having a window in it reaching up to the ceiling, as was shown in the last slide but one, and as is shown in this case also. Where it would be much used it should be provided with independent ventilation, should have, in fact, an air inlet and an air outlet.

It is important that the walls and ceiling should be made practically air-tight, and that there should be no places or parts about them where dust could collect and accumulate. And in public water-closets, and in water-closets which would be liable to be used as urinals, the floors should be impervious.

For the best water-closets with enclosures, as just shown, and for table-top valve-closets in private houses and important positions, a floor of solid marble from wall to wall, or to a point 6 in. or so beyond the sides and front of pedestal closets, is very desirable, as shown. The marble is sunk a little to catch any little leakage of the supply-valve, should such ever occur, and carry it away by an overflow pipe fixed to the floor, and discharging into the open air. Where marble cannot be afforded, the boarded floor inside the enclosure should be protected by a lead safe to which the lead trap under the valve-closet should be soldered. I should just say here that the overflow pipe from the safe being a clean water-pipe can be utilised for introducing a constant stream of fresh air into the apartment; but when this is done in exposed positions, the grated opening in the marble floor should be kept outside the enclosure, so that the incoming air, when frosty, may not come directly in contact with the service pipe, service valve, or closet basin.*

In inviting discussion, the Chairman said they were exceedingly indebted to Mr. Hellyer, not only for bestowing so much time on his lecture, but for one of the most instructive papers which had ever been read before them.

Mr. F. G. F. Hooper, in proposing a vote of thanks, said that a paper of so valuable a character, should be of great use in extending the knowledge of plumbing work and of sanitary science. At the present time sanitarians might take some credit for the fact that the Queen was able to commemorate so long a reign. It was interesting to recall the fact that, through the wisdom of the late Prince Consort, early in the reign the Royal palaces were examined by experts and put, so far as was possible at that time, in a sanitary condition. Had such work been more general, it was not too much to suggest that the life of the Prince himself might have been prolonged, and the Prince of Wales might have been spared his very serious illness. At the same time we were saddened in considering the shortness of life of men and women at the other end of the social scale. The early mortality among the artisan classes was to a large extent preventable. The fact that the death rate was so high amongst this class was an injury to the whole community. Sanitarians might rejoice in what they had done, and were doing, to preserve the lives of the people, but it was melancholy to have to maintain diseased men and women in workhouses, hospitals, &c., who, instead of suffering, would be strong and healthy and giving their lives to the community had their homes been more wholesome and their habits more wise. If all, like the Queen, were lovers of fresh air, the effect would be alike favourable to all. Many of the points which Mr. Hellyer had alluded to they would all take to heart. People at the present time did not consider sufficiently the ventilation in the ordinary dwelling house. The staircase, for instance, which was a means of communication, was rarely properly ventilated. If it were, much less would be heard of draughts and bad odours.

Mr. G. H. Fellowes Prynne, in seconding the vote of thanks, said that he agreed with what Mr. Hooper had said as to badly ventilated workmen's dwelling-houses; but the small suburban dwelling-house was in an equally bad state. In suburbs like Ealing, and, of course, elsewhere, the sanitation of supposed sanitary houses was abominable. He had recently been called in to examine a house which had been pronounced satisfactory by a "sanitary surveyor," and as the result of the ordinary smoke test, the house was found to be in a most defective condition. Another point he would like to refer to was as to the number of theories amongst architects as to what constituted the best sanitary arrangements, which caused the opinion of the sanitary expert to be sought after. As a result, there was springing up a class of men known as "sanitary surveyors." He recently knew of a case where the charges for the "sanitary surveyor" were 15 per cent. on an expenditure of over 1,600*l.*, the sanitary surveyor replying, in answer to remonstrances, that it was generally agreed that the charges of the sanitary expert should be higher than those of the architect for mere architecture. He could not help thinking that more attention should be given to matters of sanitation on ships. Any one who had travelled by sea, especially in the smaller ships, would know how insanitary were the closets in ships, regular pestilential breeding boxes. In the

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* Owing to pressure of other matter, we are obliged to hold over the remainder of this paper, and some additional diagrams, until next week

Atlantic once, in a rough sea, the water did not go down, but came up one of the closets in use, with results better imagined than described.

Mr. W. E. Bland (Newcastle) said that he was expressing the opinions of sanitarians in the north when he stated how much he appreciated Mr. Hellyer's work. One important matter which the lecturer had referred to was as to the valve closets having the water in the basin separate from that in the trap. That was a point which he had not noticed previously, although he had been a lecturer on plumbing for eight or nine years.

Mr. J. Osborne Smith said that that meeting came very opportunely after their recent Jubilee dinner, when it was said, as it was often said, that drains were not architecture. That was possibly true, for there were many things which were not architecture in that sense, although they were parts of a building; but he thought the suggestion was a wrong one, and the meaning conveyed in that phrase was the wrong advice to give to students. Architecture was the formation, the designing and production, of beautiful buildings; but a building could not be regarded as either beautiful or perfect unless it was also healthy; unless they paid attention to that portion of the practical work connected with architecture and produced reasonably healthy buildings, they had not considered sufficiently the interest of the client, nor done what they had been paid 5 per cent. for doing. He agreed with Mr. Prynne that architects should not let this practical work get into the hands of sanitary surveyors, since it was work which architects ought to look after themselves. He regretted that clients had frequently gone to him complaining of the inconvenience suffered in regard to defective drainage due to the want of attention on the part of architects. One reason of this was that insufficient attention was given to simple matters, and adequate expenditure was not incurred at the right moment. Expenditure was often lavish on parts of the building that were to be seen and the hidden parts were often sacrificed in consequence. When students were designing buildings they could put the closets and lavatories in the right places if they thoroughly understood the principles on which they were working.

The Chairman, in putting the vote of thanks, said that it had been well said that genius was the capacity for taking pains, of which they had had a lesson that night. He could not help thinking that if they wanted to learn a lesson thoroughly they should go to the very best authority they could find. One thing that made them happy in the present day was that sanitary science was approaching to a state of finality. The science now, from being complex was becoming simple, and he hoped that it would not be long before the denser bodies of the country, Local Boards, &c., would find that it was necessary to give some other form of finality in these matters than to say that their by-law must be complied with at all costs. We might, perhaps, some day get even a simpler form of valve-closet than that which was recommended at present, but the diagram which Mr. Hellyer had shown them that evening would make them feel that they were one step nearer to perfection. As an Association they ought to join with other bodies in emphasising the need of a codification of by-laws on sanitary matters. Let them, as architects, all remember that a house is a machine, and a very important machine—not a box with ornamental fronts, but a machine in which people had to spend their lives—in which they had to live and die. Architects had to accommodate people in health and sickness, and at the last moment of their existence, and no part of the habitations of the people was unworthy of an architect's skill and care. He, as an artist, must thank Mr. Hellyer for getting rid of the ornamental basin, and for the good taste displayed in the models brought there that evening. Nothing was in worse taste than the fluted or the foliated closet. If they, as architects, were to send deprecatory post-cards to the makers who sent them such specimens, perhaps there would be less of such work manufactured.

The vote of thanks having been put and agreed to unanimously,

Mr. Hellyer, in reply, said he was glad that architects took so much interest in sanitation. He believed it was a question for architects, and that was why he was present that evening. In his opinion a house was not complete unless it was made healthy. Architects could do a great deal to aid the plumber, and for the health of the country, by studying sanitation up to a point; they did not need to go into all the details—in fact they would not be able to do that, for so extensive was the subject, and so extensive were the phases of an architect's work that it would be impossible to do so.

The Chairman having announced that the meeting was adjourned "until the annual excursion," the proceedings terminated.

THE INSTITUTION OF CIVIL ENGINEERS:

CONFERENCE OF MEMBERS.

A THREE days' conference of the members of this Institution was opened on Tuesday at the Westminster Town Hall, and in the Guildhall, Westminster.

The opening meeting was held in the Town Hall, Westminster, when the President, Mr. J. Wolfe Barry, addressed a large audience. After a few opening remarks, he glanced at the history of the Institution since its formation in 1818. He said that its ramifications extended not only to every city and town of the United Kingdom, but its members and representatives were to be found in every country to which British enterprise had extended. From the small beginning of 1818—which had not attained to a growth of 200 members of all classes in 1828, they had increased by leaps and bounds, so that they now numbered 6,200 members, associate members, and associates, and 900 students, making a total roll of 7,100. Of the 5,000 members, associate members, associates, and students in the United Kingdom, 1,950 of all classes were living or practising in the Metropolis. In many of the great towns of the Kingdom they had important local associations directly connected with the Institution. The number of members and associate members in the various local associations was as follows:—Birmingham and the neighbourhood, about 200; Glasgow, 150; Manchester, 200; Newcastle-on-Tyne, 120; Leeds, 150. It was with the view of further strengthening the bonds of union that the Congress of this year had been instituted; and he hoped, not only that it would have the results which they all had so much at heart, but that it might be the precursor of many more annual gatherings of a similar nature. Apart from visits, their desire had been to encourage, by means of short papers read at the meetings of the Sections, an interchange of ideas and the imparting of the most recent information on all the multifarious subjects which together were included in the expression civil engineering. Thus they had found that seven Sections naturally presented themselves as indicating that amount of specialising which in practice their profession found desirable. The Sections into which the Congress was divided were as follows:—1. Railways.—Chairman, Sir B. Baker. 2. Harbours, Docks, and Canals.—Chairman, Mr. Harrison Hayter. 3. Machinery and the Transmission of Power.—Chairman, Sir Frederick Bramwell. 4. Mining and Metallurgy.—Chairman, Mr. Forster Brown. 5. Shipbuilding.—Chairman, Sir William White. 6. Waterworks, Sewerage, and Gasworks.—Chairman, Mr. James Mansergh. 7. Applications of Electricity.—Chairman, Mr. W. H. Preece. The papers to be read at these various Sections were all short, and each was to be looked on more as introducing a subject for discussion than an exhaustive dealing with the matter in hand. The idea which they had had in view was to encourage by all means the conversational interchange of ideas and knowledge rather than any set debates. He thought that engineers as a body were always ready to give their brethren the benefit of any experience or knowledge which they might have happened to gain. He did not think that theirs was an acrimonious profession. They might have their contests before tribunals of various kinds, but he thought they were free of mean jealousies and of what he might almost call the crime of importing personal animosities into their professional struggles. Again, they thought that a Congress would be very beneficial as bringing about an acquaintance with the personality, as well as with the work, of so many who up to now had not had the advantage of meeting each other. He should like it to be distinctly understood that any repetitions of that Congress, so far as his views and the views of the present Council were concerned, would be like this—namely, a Metropolitan Congress. It was not intended to be a peripatetic Congress, meeting this year in London, and another year elsewhere. The object which they had before them was to bring those who live out of London into London, not to take Londoners and others elsewhere. London was so large that it was naturally the centre to which all local associations could occasionally turn with advantage to themselves and with manifest benefit to Londoners. Further, it contained the home of the Institution, associated not only with so much of present interest, but still more with the important memories of the past—with Telford, Walker, Rennie, the two Stephensons, Brunel, Locke, Vignoles, and others who had gone before, and with so many of the fathers of the profession who, happily, still adorned their Society. The home, further, contained their unrivalled library and a fund of engineering information. Lastly, by arranging the Congress at the usual time for their annual conversazione, they were able to meet socially and to show some hospitality to their brethren. All these considerations pointed, in his opinion, unmistakably to London as their rallying point, and he saw no reason for any other arrangement. In conclusion the President said:—"Let me once more speak to everybody a word of hearty welcome, and permit me now to dismiss you to the work of the various Sections, with the earnest hope that this Congress may be a conspicuous landmark of the progress of our noble profession and in the usefulness of our Institution, which has had, and I am persuaded will have, so fine a career of usefulness."

At the close of the President's Address, Sir F. Bramwell took the chair, and the following papers were read and discussed:—Mr. W. H. Preece on "The Transmission of Power by Electricity"; Mr. E. B. Ellington, C.E., on "The Transmission of Power by Water"; Dr. E. Hopkinson (for Mr. John Hopkinson, jun.), on "The Transmission of Power."

The Section for Railways met in the Council Chamber at Westminster Town Hall, under the chairmanship of Sir B. Baker. Papers were read by Mr. H. Copperthwaite on "Rails and Permanent Way," and by Mr. F. W. Webb on "Permanent Way."

The Waterworks, Sewerage, and Gas Works Section sat in the Council Chamber at the Guildhall, Westminster, under the presidency of Mr. James Mansergh, who read a paper on the "Law and Allocation of Underground Water," which we refer to in another column.

The Section for Mining and Metallurgy met in the Committee Room of the Guildhall, Westminster, and papers were read on "Water in Pits during Sinking" by Mr. J. B. Simpson, "Deep Levels in Mining Practice" by Mr. Bennett Brough, and "Deep Mining in Cornwall" by Mr. W. Thomas.

In the Shipbuilding Section, presided over by Sir W. H. White, and the Section for Harbours, Docks, and Canals, papers on various departments were also read, discussions ensuing.

In the afternoon visits were paid to various engineering works in the vicinity of London.

In the evening there was a reception by the President and the Council, at which over a thousand members and guests were present. The interior of the new building was filled with pictures on loan and models of engineering works.

The Conference was resumed on Wednesday and Thursday.

COMPETITIONS.

NURSES' HOME, WANDSWORTH.—The first premium (50 gs.) in this competition has been awarded to the design bearing the motto "Nightingale," by Messrs. Lansdell & Harrison, of 12, Compton-terrace, Highbury, N.; second (20 gs.) to the design bearing the motto "Florence Nightingale," by Mr. F. W. Goldsmith, of 1, Verulam Buildings, Gray's Inn, W.C.; and the third (10 gs.) to the design bearing the motto "Victoria," by Messrs. Gould-Wills & Bulman, of "Inglenook," 48, Sisters-avenue, Clapham Common, S.W. The number of designs sent in was sixteen.

TOWN HALL, ENNISKILLEN.—In the competition for a new town hall at Enniskillen, Ireland, the first premiated design is by Messrs. Anthony Scott & Son, Drogheda; the second by Mr. W. Kaye Parry, 35, Dame-street, Dublin; and the third by Mr. Thomas Roe, 1, Lombard-street, Belfast. The assessor was Mr. Thomas Drew, R.H.A., who, in his report, stated that "The anonymity of the competitors has been most successfully preserved. I rejoice to say that in my examination I have had not the slightest hint or impression as to the identity of any

competitor. It is rarely that architects meet with such absolutely fair circumstances; and the conduct of this competition by the Commissioners of Enniskillen will, I trust, at its conclusion be quoted as realising what a fair competition ought to be." Nineteen designs in all were submitted.

POLICE STATION, HALIFAX.—In regard to this competition we learn that out of the seven sets of plans sent in the choice lies between the plans signed "Victorina" and those signed "V. R."

NURSES' HOME, WANDSWORTH.—We understand that the design of Messrs. Lansdell & Harrison, of Highbury, has been selected in open competition by the Guardians of Wandsworth and Clapham Union for the proposed Nurses' Home at their infirmary, and has been forwarded to the Local Government Board for their approval. The estimated cost is between 9,000*l.* and 10,000*l.*

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A LANCASHIRE district meeting of the members of the Association of Municipal and County Engineers was held at Rochdale, on Saturday, the 22nd inst. Mr. F. J. C. May, C.E., of Brighton, President, occupied the chair, and amongst those present were Messrs. J. Cartwright, Bury; Walker, Croydon; J. P. Barber, Islington; Cooper, Wimbledon; J. T. Eayrs, Birmingham; J. Lobley, Hanley; J. C. Pickering, Nuneaton; Wellbourne, Middleton; Cooke, Lancaster; Royle, Stretford; Cox, Bradford; Taylor, Newburn-on-Tyne; E. R. S. Escott, Halifax; Button, Burnley, and others.

The Mayor (Mr. Turner) offered the Association a very hearty welcome to Rochdale.

The President read a letter from Mr. Button, of Burnley, resigning his position as Secretary for the Lancashire District, which was accepted with regret.

On the proposition of Mr. Cartwright, Bury, seconded by Mr. Platt, Rochdale, Mr. Cooke, of Lancaster, was appointed to fill the vacancy.

Mr. S. S. Platt, C.E., Borough Engineer, read a paper on "Some of the Municipal Works of Rochdale." Describing the Town Hall, he said the building is in the rich domestic Gothic style, resembling some of the mediæval town halls of the Continent, and was erected from the designs of Mr. W. H. Crossland. The original cost of the building was about 150,000*l.* The foundation stone was laid in March, 1886, by the late Mr. John Bright. The extreme length of the building is 92 yards, its greatest width 41 yards, and it covers an area of 3,000 yards. The easterly end is occupied with the municipal apartments and offices. The central portion is occupied by a magnificent hall with hammer-beam roof somewhat like Westminster Hall. It will seat 1,200 persons, and is much used for public meetings, balls and concerts. The council room extends the whole width of the building and is 60 ft. by 24 ft. The upper floor at the easterly end is occupied as a School of Art. The westerly end contains the Police Department and includes a Borough Court. On April 10, 1883, a serious fire occurred which destroyed the ornamental spire and seriously damaged the stone tower supporting it, and he had the unpleasant duty of razing the tower to within about 30 ft. of the ground. Mr. A. Waterhouse, R.A., was called in, and the present tower and the restoration of the building adjoining it was designed and carried out by him, the site of the tower being moved about 15 yards in an easterly direction, leaving a porte cochère between that and the main building. The general plan of the technical school is in the form of the letter L. In the angle are placed the weaving sheds, north lighted, and so arranged that any future extension can be grouped round the same. The structure averages three stories in height, and covers an area of 1,010 square yards. The basement floor comprises a weaving shed, 53 ft. by 32 ft., for hand and power looms, a weaving class-room for sixty students, a cotton spinning class-room for forty-five students, an engineering class-room for fifty students, practical plumbing, wood turning, &c. On the ground floor, besides the necessary rooms for secretary, committee-room, teachers' common room, and students' common room, there are three large class-rooms, averaging accommodation for fifty students each. The whole of the first floor is devoted to the study of chemistry and dyeing, comprising a laboratory for eighty students, balance room, sulphuretted hydrogen room, store and reagent room, together with a chemical lecture theatre for ninety students; also a preparation room adjacent to same. A dye-house, with experimental tables to accommodate twelve students, is at the far end of the corridor farthest from the staircase. The chemical laboratory is fitted with working benches for both elementary and advanced students, demonstrators' raised platform and table, and is well and correctly lighted by large mullioned windows. Internally the building is finished in a simple yet substantial manner, with fireproof floors to corridors and elsewhere as found desirable. Externally the building is faced with red Ruabon stock bricks having terra-cotta dressings and other enriched work. The building is wholly required for science, commercial, and technical classes, and was completed and opened in 1893 at a total cost of £11,500, the architects being Messrs. Woodhouse & Willoughby, of Manchester. The school is the outcome of subscriptions raised in the Jubilee year, and was one of the first transferred under the 1891 Act, and is managed by a committee of twenty-four, fourteen of whom are appointed by and are members of the Town Council, and ten are appointed by the original subscribers, of which latter representatives he had been one since the inception of the school. After the serious fire at the Town Hall in 1883 it was decided to remove the Free Library therefrom and to erect a building specially for the purpose. He was entrusted with the designing and carrying out of the work. The building is all one story, with a basement on the northerly side, and covers an area of 650 square yards. The design is domestic Gothic, the materials used being Yorkshire parpoints with Yorkshire stone dressings. Passing through the vestibule the visitor can enter through doorways on either side, and from the entrance hall access on the right hand side leads to a large reading-room, and on the left hand side to a reading-room devoted jointly to ladies and boys. The arrangements are planned so as to afford complete supervision of the several departments by the officials of the library. The total cost of the building and fittings was 5,900*l.* In the early part of last year the committee decided to introduce the electric light, and he had recently completed this installation with the assistance of Mr. G. R. Peers, of Manchester, as consulting electrical engineer. The several rooms had been fitted up with 144 16-candle-power lamps and six 25-candle-power lamps, and opportunity had been taken to introduce an exhaust fan in the large reading-room, driven by an electric motor fixed in the ceiling for the purpose of ventilation on foggy or heavy days, when the air of the room could be changed in a few minutes. It was not possible on such a short period of working to give a reliable statement as to the comparative cost of electric light *versus* gas, but, so far, the results are very satisfactory, both as to efficiency and cost of working. The new fire-station is in Alfred-street, and beside engine-house, there are superintendent's house and nine firemen's dwellings. The actual cost of the station was 5,000*l.*, and was carried out from his designs and under his direction. About 1880 the Corporation purchased the Roch Mills and Half Acre estates, containing an area of about eighty acres, for the purpose of a sewage farm, at a cost of 26,442*l.*; but of this area about thirty-one acres includes the river, roads, buildings, and hill-side land, which is not available for sewage treatment, leaving a net area of forty-nine acres of filtration plots upon which the sewage could be disposed of. The present dry-weather flow is 1,500,000 gallons from an estimated population of 50,000. When the whole of the sewers tributary to these outfalls are completed it was estimated the dry-weather flow would be 2,300,000 gallons daily from a population of about 75,000. The sewage from the sudden outfall had, since October, 1890, been dealt with in three precipitation tanks, having a total capacity of 300,000 gallons; and in order to deal with an increased quantity in future an additional tank of 100,000 gallons capacity was shortly to be erected. Since June, 1888, the sewage from the Roch outfall had been dealt with on the area laid out for intermittent filtration without previous treatment in tanks, but the volume had so increased, and the quality of the sewage so materially altered by the addition of manufacturing refuse, as to render the land incapable of dealing satisfactorily with it; hence the necessity for an increase of filtration area and for previous treatment in tanks for the precipitation of the solid matter in the sewage. For the former purpose an additional area of suitable land, eleven and a quarter acres in extent, had been acquired, the whole of which was available for filtration areas, making in all sixty acres of filtration areas. The distribution of the sewage on the farm was from chambers connected by large earthenware pipes with iron pipes at river crossings, and thence along grips provided by a grip plough, these grips being moved from year to year to suit the working of the land. The crops grown included Italian rye grass, turnips, cabbage, and mangolds. The new works opened in September last were the precipitation tanks and plant for dealing with abstracted solid matter. The tanks consist of two roughing tanks, each of 105,000 gallons capacity, and six precipitation tanks, each of 200,000 gallons, or rather more than the present dry weather flow. By an arrangement of weir penstocks the top water level of the tanks can be raised 1 ft., thereby increasing weir total capacity by about 275,000 gallons. The tanks had been planned to allow future extension whenever required, but the provision made is believed to be ample for many years to come. The tanks are worked on the system of continuous flow, and during storm flow they can be worked in two or more sets as may be found advisable to ensure the best result. The clarified sewage on leaving the tanks passes through a regulating chamber, whence it is distributed on to the filtration areas, the effluent being discharged at several points into the river. The sludge, which contains 90 per cent. of moisture, is forced under a pressure of 100 lbs. to the square inch in presses. The resultant cake contains about 60 per cent. of moisture. At present the amount of pressed sludge averages 150 tons a week, which he considered somewhat abnormal for a tributary population of 50,000, with only about 700 water-closets in use, and the excreta of the population collected on the pail system. The total cost of the tanks, building, and pressing plant was 23,000*l.*, and with the cost of land and laying out, and about 3,000*l.* worth of work to complete the scheme, would bring up the total cost for disposal works to about 72,000*l.*, or 1*l.* per head of the present population.

The President said the subjects treated in the paper were of great interest to municipal engineers. He must say they were of special interest to himself, as he was enlarging and practically rebuilding the Town Hall, building technical schools, had prepared plans for new Free Library, Art Gallery, and Museum, and at the last meeting of the Watch Committee received instructions to build a new fire station at Brighton.

Mr. Walker, Croydon, said that in the Free Library at Croydon they had adopted what was known as the open-access system. It was at first very much opposed, as it was feared they would lose a large number of books, but the system had now been working for twelve months, and they had not lost a single book. There was no doubt the adoption of the open-access system had increased the usefulness of the Library.

Mr. Platt said the "open-access" system of library management was new to him, but he did not think it would be suitable for Rochdale.

A visit was then paid to the new Technical School, the special point of interest being the Key system of ventilation. In answer to questions, Mr. Platt said it was an expensive system to put in, but its working was perfect. The air could be changed in the rooms every ten minutes and was so diffused that those in the rooms never felt any draught.

The Mayor of Rochdale entertained the members to luncheon in the Assembly-room at the Town Hall, and the afternoon was occupied with visits to the Brigade station (where the response to a test fire call was made in the remarkable time of twelve seconds), the Free Library, and the Sewage Farm. Mr. Platt explained the various details of the working arrangements.

GOLDER'S HILL, HAMPSTEAD. — The trustees under the will of the late Sir Spencer Wells, Bart., offer for sale this property, situated on the west side of the Heath, near North End, and renowned for the beauty of its grounds, which extend over thirty-six acres. Golder's Hill was the home for three years of Mark Akenside, author of "The Pleasures of Imagination" and other poems, it being the residence of his friend and patron, Jeremiah Dyson. In January, 1748, Akenside, through Dyson's liberality, took a house and practised in Bloomsbury-square.

Illustrations.

KINCARDINE, N.B.

A COMPLETE view of this mansion was published in the *Builder* of July 6, 1895. The present drawing, now hung on the walls of the Royal Academy, is a sketch from one of the windows of the tower, and looks towards the south-west gable and turrets.

The balcony commands an exceptionally beautiful view of Deeside. The walls are rough cast with rock-faced Corrennie granite dressings, the roofs being slated with Tilberthwaite green slates.

Messrs. Niven & Wigglesworth are the architects.

SHIPTON HALL, SALOP.

THIS is a charming Elizabethan house, standing firmly erect in vigorous old age, overlooking the beautiful Corve Dale, about midway between Bridgnorth and Ludlow, the ancient home of the Mittons, a Shropshire family of renown.

The hall is built in a grey coloured freestone, laid in regular courses of varying heights, with a very fine joint, and the work is weathered with delightful patches of a greenish grey tint, and warmer effect on the stone mullioned windows. The older portion of the hall is covered with stone slates, and the tall chimney shafts, with their V shaped projections and projecting courses, are built in thin bricks. This form of chimney shaft occurs very frequently on work of this period in Shropshire.

One of the great charms of Shipton Hall is that in most of the windows of the Elizabethan portion of the building the original small diamond panes are intact, and that where they no longer remain, modern glass with its blank and most disastrous effect on the general appearance of such a building has not superseded them, but the original panes, removed more than a century ago, have been replaced by small rectangular panes in old lead work, which is not out of harmony with the architecture. Long may Shipton be spared the degradation of plate glass.

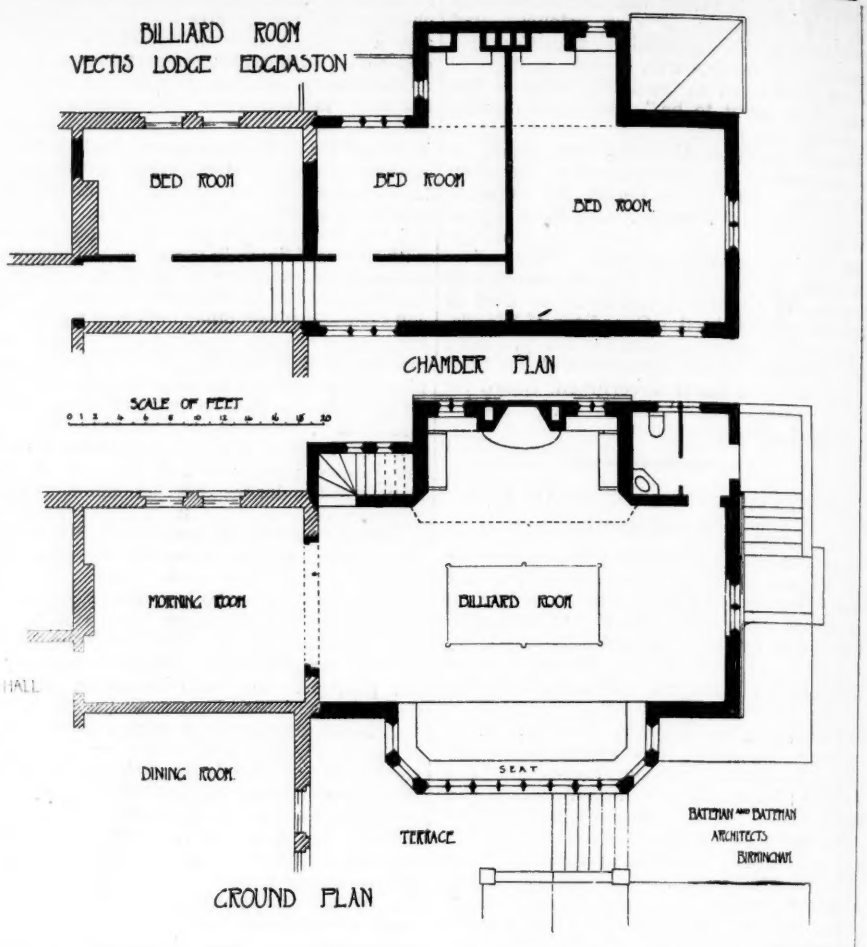
A further object of great interest and historical value, giving to this ancient manor-house a great amount of dignity and importance, is the old stone dove-cot or pigeon-house, which stands on the high ground embedded in the trees on the right-hand side of the picture. It is a very rare example, being a circular stone tower with a conical roof surmounted by an exceedingly graceful oak turret and having a great revolving ladder within swinging from the centre and affording access to the thousand homes of the birds of other days. When it is remembered that only a lord of the manor or a rector was allowed to possess one of these buildings, it will be seen that the presence of one of so early a date indicates a house of ancient importance.

The spirit of so-called "restoration" which often effectually destroys the ancient character of old architecture has not invaded Shipton, and "the new owner has not cut down the trees and the ivy is not replaced with stucco," but has wisely contented himself with making a few necessary repairs, and the opening out of existing windows which were bricked up at the back (probably in the days of the window tax); a very ugly rain-water pipe which cut the tower in about equal heights has been removed. The present roof of stone slates which covers the oldest portion of the building, and is a vital element of the ancient character of the building, has been carefully repaired with similar materials. In repairing the stone-work the disturbing effect of the usual bricklayers' "cut" and projecting joint has been avoided.

The new entrance gates have been made upon the lines of the old portions of those which existed formerly. It is proposed to complete the north wing, which was begun in Georgian times, by providing a billiard-room, gun room, &c., in keeping with the Georgian work, with new sash windows set in the brickwork. The hall is panelled throughout with arched openings to the rooms and staircase hall leading therefrom.

The drawing-room and morning-room are panelled with secret recesses therein in the chimney breasts and between the rooms and the hall. The upper rooms are also panelled.

The repairs have been carried out by the owner under the advice of Messrs. J. H. Hickton and H. E. Farmer, architects, of Walsall.



VECTIS LODGE, EDGBASTON.

THE addition to this house, shown by the illustrations, consists of a billiard-room and two bedrooms over. Owing to the width of the morning-room, and its roof being only 15 ft. 10 in., playing space for a billiard table is provided by throwing out a large bay window on the one side and a fireplace recess on the other (15 ft. wide and 7 ft. 6 in. deep), which, with the gallery over, gives some interest to the room. The floor, framing, &c., are in oak, and the frieze adopted is a wall paper of Messrs. Watts, Limited, designed by Mr. Bodley, A.R.A. The bedrooms over are panelled up to the springing of barrel ceilings arranged in the roof.

Mr. John Bowen, of Balsall Heath, has carried out the works from the designs of the architects, Messrs. Bateman & Bateman, of Birmingham and London.

The drawing is exhibited at the Royal Academy.

COTTAGES, HEATHWAITE.

THESE are good specimens of cottage architecture, in which a certain special character is obtained by the introduction of the plain sloping buttresses at the angle and on each side of the door; and in other respects there is a good deal of character about the small building, of which Messrs. Mawson & Gibson are the architects.

HOUSE, WALTON-ON-THAMES.

THIS slight sketch of a slight little house, by Mr. John Watson, is hung at the Royal Academy, and is referred to in our article of to-day on another page.

THE BLACKWALL TUNNEL.—The new Tunnel under the Thames, which will afford a ready means of communication between the districts of Poplar and the East and West India Docks on the north, and the neighbourhood of Greenwich and Woolwich on the south, was opened last Saturday by the Prince of Wales. In our last issue an article descriptive of the new work will be found, but we omitted to mention that the bulk of the glazed bricks used was supplied by Messrs. John Hall & Co., of Stourbridge, while the electric light work was carried out by Messrs. Laing, Wharton, & Down, Limited, of London. In the design of the entrance houses, the Council's architect, Mr. T. Blashill, was associated with Mr. Alex. R. Binnie, the chief engineer.

ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The Edinburgh Architectural Association visited on Saturday last The Binns and Midhope, Linlithgowshire, by permission of Mr. J. Cornwall Dalyell and the Earl of Hopetoun. Mr. Thomas Ross, F.S.A., Scot., in describing The Binns, said that it occupied a charming situation on the summit of a low ridge of hills to the south of Blackness Castle. On plan it formed three sides of a square, the east wing being the oldest part, and probably dating from the sixteenth century, and the north and west wings from the seventeenth century. One, at any rate, of the fine plaster ceilings seemed to be by the same hand that executed those at Moray House, Edinburgh. The Dalyells of The Binns were descended from the Dalyells of Dalyell, and they acquired The Binns towards the end of the sixteenth century. General Dalyell took a most prominent part in the events of the seventeenth century, dying a very old man in 1685, in spite of a large reward being offered for him, dead or alive. Mr. Ross, in his description of Midhope, said it was a lofty mansion-house situated in a picturesque dell, and quite hidden from view till one was almost within call of it. Oblong on plan, it was erected at three distinct periods. The whole basement was vaulted, and a small newel stair in the older part and a fine oak stair in the later gave access to the upper floors. Alexander Drummond, second son of Alexander Drummond of Earnock, was the first laird of Midhope, and in the beginning of the seventeenth century the property passed into the hands of the Livingstone family, who probably built the eastern parts.—On the motion of Dr. Rowand Anderson, a vote of thanks was passed to Mr. Dalyell, the Earl of Hopetoun, and the leader of the visits, Mr. Thomas Ross.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.—The closing meeting of the winter session of this Association was held in the Grosvenor Hotel, Westland-row, the President, Mr. R. Caulfield Orpen, in the chair. The meeting was held for the purpose of receiving a report from the Committee and arranging business details. The report dealt with the work of the past session and included statements dealing with the classes established. The progress was considered to be highly satisfactory, the Association having a membership of over 100, seven new members having joined recently. A vote of thanks was passed to the Council of the Royal Hibernian Academy

Central Building, Stockholm Exhibition.

for their kindness in granting the use of the Academy house for the purpose of holding the annual conversazione. It is intended that the work of the Association shall not entirely lapse during the summer, as visits will be paid on Saturday afternoons to buildings and places of interest in and around Dublin.

CENTRAL BUILDING, STOCKHOLM EXHIBITION.

THIS is a sketch showing the central feature of the principal building for the Scandinavian Exhibition at Stockholm, which was opened this week. We are indebted for it to an architect at Stockholm, Mr. C. Adlersparre.

AN EXHIBITION OF POSTERS.

AN exhibition of designs for posters should be sufficiently attractive and interesting to the public, for it is the one modern art, excepting architecture, which they have thrust upon them wherever a new building is being erected. In fact, if ever a Committee of Public Taste were to be appointed, their deliberations would consist largely in regard to posters. A poster, from its very nature, must be looked at; it is an advertising medium designed to catch the public eye, and the only thing we can expect is that it may do so without offending our artistic susceptibilities—that it may effect its legitimate purpose without hurting us.

The exhibition of posters now on view at St. Bride's Institute is an excellent one. It is a one-man exhibition, and consists of original designs for posters by Mr. Louis Rhead, of New York, but formerly of the Wedgwood Pottery. There is also an absence of bad drawing and impossible proportions o the human figure, which are to be seen on some hoardings in London. As a whole, the exhibition has strong points for our praise; the drawing of the figures, their decorative accessories, and their gorgeous colouring are certainly to be commended. The artist has certainly borne in mind that the first purpose of a poster is that it may be seen from a distance, and we must not be led away by the somewhat glaring effect produced by being seen together in a small room. Mr. Rhead has a liking for the draped figure, which seems very suitable for the purpose, while for colouring, schemes of greens, blues, and violets predominate.

We may enumerate among the more noticeable of the designs the one for a champagne brand, a single figure subject draped in blue and green only. Design and handicraft represented by two seated draped figures, with coloured draperies and elaborate surface pattern. Another of the same type is that of a Gentlewoman's Magazine, with four standing figures representing instruction, pleasure, fashion, and the fine arts. The drapery folds are excellent and the colouring rich and harmonious, classic Ionic columns being introduced between each. The design for flower and vegetable seeds is in a far lighter key, the dresses of the figures being left nearly white, and the whole scheme worked from that. "Pure milk" is represented by a milk-maid in a light satisfactory key, and seems almost to emphasise the fact it is best to have few figures and to keep them of a certain size; there is apt to be confusion otherwise when seen from a distance.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring-gardens, Dr. Collins, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the Hampstead Vestry 6,315*l.* for street improvements; the Fulham Vestry 3,385*l.* for street improvements; the Limehouse District Board 800*l.* for providing an infectious diseases shelter; the St. Pancras Guardians 1,000*l.* for works at St. Anne's Home.

The Works Department.—The whole of the sitting was taken up with a debate on the Works Department, the discussion being directed chiefly to the recommendations of the Special Committee appointed to inquire into the working of the Department and to an amendment moved by Lord Onslow. In our issue for April 10 we made some comments on the report of the Special Committee, whose recommendations were as follows:—

"*(a)* That in the opinion of the Council some definite organisation for the direct employment of labour and the direct execution of public works by the Council under the superintendence of its own officers is desirable and beneficial.

(b) That a Works Board be substituted for the Works Committee, such Board to be elected forthwith, one member to be nominated by and from each of the following committees: Finance, Asylums, Bridges, Fire Brigade, Highways, Improvements, Main Drainage, Parks, and Housing of the Working Classes; and that in future years the election of members of the Board do take place at the meeting of these committees next to March 31.

(c) That any Committee desiring to propose to the Council the carrying out of any works without the intervention of a contractor, shall, in the first instance, obtain an estimate from the proper officer and then refer such estimate to the Works Board for their consideration before reporting to the Council.

(d) That the Works Manager shall, unless in any case otherwise ordered, carry into execution all works which the Council resolves to execute without the intervention of a contractor.

(e) That when the Council wishes to execute any works without the intervention of a contractor, the plans, specification, and estimate shall, unless otherwise ordered by the Council, be thereupon referred to the Works Manager.

(f) That the Works Manager shall be responsible to the Works Board, and the Board shall report from time to time to the Council.

(g) That this report be referred to the General Purposes Committee, and that it be an instruction to that Committee to amend the standing orders in accordance with the foregoing recommendations.

(h) That it be referred to the General Purposes Committee to make further amendment of the standing orders by the insertion of words coupling the unions of employers where such exist with the trades unions, in reference to the rates of wages and hours of labour.

(i) That it be referred to the General Purposes Committee to make further amendment of the standing orders by omitting provisions giving powers to the Clerk of the Council to direct examination of the books of any one contracting with the Council for the execution of works, other than the time-sheets or books or wages-sheets or books.

(j) That the statement of Mr. Edwin Waterhouse be referred to the comptroller for report upon each and all of his suggestions with reference to the accounts, and that the comptroller's report be referred to the General Purposes Committee with a view to the adoption of Mr. Waterhouse's recommendations."

Since the report was first brought up, the Works Committee has submitted some fresh returns of completed works, which show that certain losses have been incurred on a few of the undertakings, while a report dated May 17 shows that work estimated to cost 61,701*l.* has cost 70,782*l.* In regard to the work for the foundations of the Heath Asylum, Bexley, the revised estimate was for 31,833*l.*, and the approximate actual cost 37,578*l.* It is further stated that the Architect has not certified this account, on the ground that the damage caused by frost has not yet been repaired. Another work, the Wandle branch sewer, has cost 11,873*l.*, the revised estimate being 9,670*l.* The Manager, Mr. W. Adams, in his report on these returns, says the excess, in his opinion, has been due in great measure to the low prices accepted by the Works Department. In the case of the Heath Asylum foundations, the detailed prices were prepared by the Architect, and referred and accepted by the Works Department. The preliminaries were not priced, but a lump sum of 300*l.* was put down for the clerk of works' office and men's conveniences, whereas the actual value, as he estimated it, is some 1,000*l.* more.

Sir Arthur Arnold, Chairman of the Special Committee, moved the reception of the report. He said he subscribed to every line of the report which he now presented. The Committee were unanimous in finding that the labour policy of the Council had an important connexion with the inception of the Works Department. That portion of the report contained a severe indictment of the policy of the Council in the beginning of 1892 in regard to their dealings with labour, and especially in regard to their dealings with contractors. The Committee stated that the position of the contractors of London in regard to the Council was not at present the most advantageous to the service of the public, and one of the main foundations of the report was a desire that there should be a rectification in that respect. He was not in favour of a large undertaking of architectural works by the Department; but he specially warned the Council not to deprive itself at this juncture, and whilst its relations with contractors remained as at present, of the means of carrying out any work at all.

The reception of the report was agreed to, and the returns of the Works Department were also received.

The Earl of Onslow then moved the following Amendment to Recommendation (*a*):—"That the Council, being satisfied from the evidence submitted and the further Report of the Works Committee that work executed for it by the Works Department is not superior in quality to that executed by contractors, and that considerable loss has been sustained in consequence of the operations of the Works Department, resolves that no further work shall be entrusted to that Department; and that it be referred to the General Purposes Committee to consider and report as to the arrangements necessary for the due completion of the works in hand and for dealing with the central works in Belvedere-road." He said that all the members of the Committee without exception came to the conclusion that the Works Department of the Works Committee as at present constituted was not in a satisfactory condition. The Council could continue matters as they were, substituting some other authority for the Works Committee, or consider what it would substitute for it. It was agreed on all hands that a body consisting for the most part of amateurs and gentlemen who had many other avocations to pursue could not give the time necessary for the conduct of a vast contractor's work. Under the circumstances, they might be astonished, not that the proceedings of the Works Committee had been so disastrous, but that they had not been very much more so. That was largely due to the industry of the late Chairman, Mr. Ward. From the latest returns they knew that there had been a loss of 6,708*l.*, to which he was afraid he must add probable loss on uncompleted works—estimated at 11,000*l.* Therefore there was a grand total loss of 17,700*l.* What was the use of a department which could not take work without incurring a loss. Had the working classes been benefited? No one could say they had, because all respectable contractors were now willing to pay the same rates that the Council paid. In 1892 no doubt a stand had been made by contractors against those rates, but that condition of things had passed away. He would not advise that the present system might be done away with entirely. It was not necessary for them to pass a self-denying ordinance, and say that they would never at any time directly employ labour to carry out the work of the Council. They had another alternative, which was that, while maintaining freedom of action to employ direct labour, they should abolish both the Works Committee and the Works Department. He had not long ago thought that course unnecessary, but he had entirely altered his opinion since reading the last two returns recently issued by the Works Committee. He held that the reason of the failure of the Department was its anxiety and greed to grab every sort of work so that it should not fall into the hands of contractors. They had spent upwards of 100,000*l.* on their works at Belvedere-road in order to be carpenters and joiners, when experts told them that they had never seen such infamous joinery as that done by the Council. With regard to wages, he pointed out that the wages paid by the Department were the same as those paid by any respectable contractor, and where was the advantage of saddling the ratepayers with a large loss so long as they retained, as they must do, the wages clauses in all their contracts? What the Council had been seeking to do was to carry on a gigantic contractor's business. It had failed to do what never had been attempted by any public authority or municipality. The Department had been exceptionally favoured; it had been allowed to pick its jobs; it had made no bad debts; it had large discounts for cash; it required no capital to pay its workmen; it had unlimited power to borrow; and the result had been nothing but indifferent work, falsification of accounts, and a ruinons cost to the ratepayers. If there had been any saving made by the Department, it would have justified its existence; but, on the contrary, it had been a lamentable failure, and he asked the Council to apply to the Department the phrase so often in the mouths of Progressive opponents of the House of Lords, that it was useless, dangerous, and ought to be abolished.

Sir Godfrey Lushington seconded the amendment, and pointed out that, in striking the loss that had resulted from the existence of the Works Department, they must take into account not merely the difference between cost and estimates, but also the probable amount of profit that the contractor would have made. As to the jobbing works, which came out favourably to the Department, he thought the schedule of prices, which, for purposes of comparison, served as the estimate, was too high. He believed the loss incurred by the Department arose from the fact that under a model employer the men had not worked as well as they were made to do by the contractors. Therefore he felt that the Department, instead of doing the working man good, had inflicted a moral injury upon him.

Mr. McKinnon Wood said he was well aware that the report of the Special Committee had been a disappointment to the Moderates. There was no atom of evidence in support of the statement that there had been instigation of the clerical irregularities. Lord Onslow had professed to mention the actual loss that had been incurred. He (the speaker) did not believe Lord Onslow knew what was the actual loss. If he did, no one else did. In regard to some of the items, Lord Onslow had been dealing with works of which the accounts had not been completed, and in reference to which the final estimates had not been drawn up. He (Mr. Wood) had always demurred to a comparison between estimate and cost being the test of the Department's efficiency. The true test was associated with the question of quality. To prove the excellence of the Department's work there was plenty of expert and Moderate evidence, and as to the work of contractors, did councillors forget the experiences of certain large municipalities, and of the London School Board? The comparison between cost and estimate was specially illusory because of the difference in the treatment meted out to the Department and the contractors. Last year work was done by a contractor for which the estimate amounted to 36,000*l.* The contractor, no doubt properly, claimed 52,000*l.*, and, after the ordinary formalities of arbitration, he received 44,000*l.* If the ideal was that the Department should do the work 10 per cent. below the lowest cutting contractor, by all means let the Department go.

The Deputy Chairman (Mr. Torrance) held that the Works Department had amply justified its creation, and the blunders and losses were, he felt, largely due to the composition of the Committee. In possessing such a Department, the Council was only doing what other municipal bodies of less importance had long done.

Mr. Cohen, M.P., in supporting the amendment, said the Department had had a fair trial for some years with the assistance of a chairman who had been absolutely devoted to its interests, and, in spite of that, it had been a lamentable failure.

Sir Arthur Arnold strongly condemned the position taken up by Lord Onslow and Sir Godfrey Lushington. He asked them where they would have been had they, in face of the labour policy of the Council, of which he did not entirely approve, been without a Works Department, and with nothing between them and the enraged contractors of London? He pointed out that the Council had been animated too much by partisanship, mentioning that in the case of an excess charge by a contractor at the Isle of Dogs, the Council passed the vote without a word, but in the case of the Works Department in similar circumstances, they debated such a thing not as a matter of construction, but as matters of principle. The jobbing works had been the best test of the Works Department. Every witness who came before the Special Committee had condemned the Works Committee because of the quarrels among its members. It was absurd for Lord Onslow to talk of 240,000*l.* as a gigantic turnover; it was a trifle to the turnover of much smaller municipalities.

Sir J. Blundell Maple, M.P., in supporting the amendment, said he considered the late manager a most honest and capable man. He was now in his (the speaker's) employment at a salary of from half to a third as much again as he had received from the Council, and he considered him a cheap man.

Having arranged to meet at 3 o'clock on Friday to dispose of the recommendations of the Committee, the Council adjourned soon after 7 o'clock.

SCOTT MEMORIAL, WESTMINSTER ABBEY. — A bust of Sir Walter Scott has been placed in Poets' Corner of Westminster Abbey immediately adjoining the monument of the Duke of Argyll. The bust is a copy of the Chantrey bust at Abbotsford, and is the work of the Scottish sculptor, Mr. Hutchinson.

Correspondence.

To the Editor of THE BUILDER.

R.I.B.A. ELECTIONS.

SIR,—As your correspondent "Y" has mentioned me in your issue of this day, kindly permit me to state that I did not give up practice two years ago, but in 1888, and that I am not employed by the London County Council in the way stated, or in any other manner inconsistent with the profession of architecture; were it otherwise, I might have become liable to suspension or expulsion, under the provisions of By-law 22 of the Royal Institute of British Architects.

The Register of Fellows and Associates contains the names of about sixty architects who are officials in her Majesty's service, or engaged upon the staffs of County Councils and other public authorities (exclusive of Metropolitan District Surveyors and members in public employment but giving private addresses), and it is not unreasonable to suppose that some of these would prefer to be represented on the Council of the Royal Institute of British Architects by one of themselves rather than by practising architects only.

The Dundee and York Allied Societies of the Royal Institute of British Architects number, altogether, only two Associates and four Fellows, yet these six gentlemen may be represented on the Council of the Institute by two of their number (one for each Society), therefore, proportionately, architects in public offices are insufficiently represented.

GEORGE H. BIBBY.

SIR,—There is probably not one of the twenty-four candidates for the eighteen seats on the Council who would not fill the position in a satisfactory manner, but it is useless to nominate and elect those of them who will not or cannot find time to attend to the duties. It is for this reason alone that the claims of the new candidates are supported by so many members of the Institute.

Your correspondent, "Y," asks, "What have Mr. George H. Bibby and Mr. Delissa Joseph done that they should be nominated as candidates for the Council?"

In reply; they and the other new candidates have signed undertakings to serve on the Council should they be elected, and *all have therefore bound themselves to give reasonable attendances at the meetings*, and, incidentally, to set forth an example for the non-attending members to emulate, for many of them neither represent themselves at the meetings or the Fellows and Associates who took the trouble to vote for them.

Your correspondent "Y" admits that Mr. Joseph would be an acquisition as a member of the Board of Examiners, and, if so, he is surely most suitable as a candidate for the Council. With regard to Mr. Geo. H. Bibby (who has been a member of the Royal Institute of British Architects for more than twenty years), it may be said that he is the author of many books and articles upon architectural subjects, and that these have been very extensively published in England and America, and in *The Surveyor* of this day appears an illustrated article from his pen, under the title of "Old English Land Surveying," which contains some curious notes upon ancient measures of lengths and areas, which will be read with interest.

A LONDON ASSOCIATE.

SIR,—I beg to call attention to an erroneous statement that appeared in your last issue, p. 463, in an editorial note under a letter signed "Y," to the effect that the names of Mr. Delissa Joseph and Mr. Bibby were proposed by the Council of the Royal Institute of British Architects as candidates for election to that body.

These two gentlemen were each nominated, independently of the Council, by seven subscribing members, according to By-law 30.

W. J. LOCKE,
May 24, 1897. *Secretary R.I.B.A.*

*** As the names appeared in the voting list issued by the Council, we supposed that the Council had selected them in the ordinary course.—ED.

THE ELECTION OF FELLOWS AT THE INSTITUTE.

SIR,—Allow me, through your columns, to call the attention of members of the Institute to the importance of the issues raised by the report of the Special Committee on Election of Fellows, which comes before the meeting on Monday evening next; and to earnestly request all those who have the interests of the Institute at heart to attend this meeting.

H. V. LANCHESTER,
Hon. Sec., R.I.B.A. Associates' Committee.

THE QUESTION OF EXAMINATION IN ARCHITECTURE.

SIR,—Referring to the report in your issue of the 15th inst. of the Jubilee Conference of the Architectural Association, and to the President's somewhat

revolutionary suggestion with respect to the Institute Examinations: Mr. Pite is always interesting, and he was careful to state that his proposals were merely his personal views; but I feel so convinced that he had not, in this instance, thought out the effects of his scheme, that I think it desirable to point out one or two results which appear to me on the very surface to be absolutely fatal to his proposals.

When he defends the principle of compulsory examinations on the ground of closing the ranks against incompetent men—the public being entitled to some guarantee of proper training on the part of those to whose care their health and wealth is confided—all unprejudiced minds must agree with him; but how he can advocate a building-science course, merely, as a qualification for Associateship for the Royal Institute of British Architects I fail altogether to see. The certain effect would be to flood the Institute with mere builders.

The average employer doubtless seeks our advice mainly for utilitarian reasons; but, fortunately, in a large, and I hope an increasing, number of instances he employs us because, in addition to a builder's knowledge, we are supposed to have taste in design.

This is the sentiment we all wish to encourage. It is the only hope for national architecture of a high type, and the way we can achieve our object is to prove that all who profess to be architects are men of taste and culture in design. We must, of course, possess those practical and business qualifications which the public very naturally place even before beauty. The public claim a guarantee of both the science and the art sides of our work, which are indissolubly wedded and cannot be divorced in considering any test of qualifying study.

The Institute has wisely recognised this principle in its course of examinations, and whatever alterations may be made in the system, the two sides must stand or fall together so long as the Institute professes to be a body of architects, of which the membership carries with it a guarantee of adequate training. So strongly have I always felt that some test of study in drawing and design must be included in the Examination, that if I believed one or other of the two sides (building science and art) must go to the wall, I would say retain the art and let the science go. Test every candidate for admission to our ranks as to this first and most important qualification, without which he can never be an architect at all. Let us make sure whether the candidate's mind is one adapted to an artistic calling. To exclude at an early date men who do not give elementary promise of such suitability is to render the greatest service possible to our art, to the man, and to the public.

I maintain emphatically that a fair test of adequate study in drawing and design is as possible as are test examinations in the science of building construction, and that careful tests creditably passed should, and do, ordinarily qualify for practice, and therefore for membership of the Royal Institute of British Architects, and of any other society endeavouring to promote and ennoble our art.

It may reasonably be held that the Progressive Examinations are not yet satisfactory. They are, however, a worthy effort to meet such a demand as that of the Architectural Association in its petition of 1855, reprinted in our Jubilee number of the Architectural Association "Notes."

It is now the duty of the Architectural Association, as the teaching body, to support the Royal Institute of British Architects in making an ideal examination. With this in view, two steps appear to me of primary importance. First, to get a much stronger representation of the Architectural Association teachers on the Board of Examiners; and, secondly, to reconstitute the Court of Adjudication in design and drawing. Such a delicate and all-important task should not be entrusted to any one examiner, but to a carefully selected sub-committee of the standing Art Committee, possibly with the Art Committee as a court of appeal.

All this does not preclude the adoption of an honours course in design, such as Mr. Beresford Pite suggests as a qualification for Fellowship.

W. HOWARD SETH-SMITH.

The Student's Column.

SPECIFICATIONS.—XXII.

CONDITIONS OF CONTRACT.

THE conditions of contracts are very frequently modelled upon the headings prepared by the Royal Institute of British Architects and the London Builders' Society in 1870; or on the schedule prepared by the Institute in 1895, which latter, however, does not meet with the complete approval of the builders; and the student may, if he thinks fit, adopt one or the other of these models. Or he may, if he prefer, adopt the suggested headings which we now give.

No. 1.—The contractor shall execute and completely finish in a good, substantial, and workmanlike manner, in accordance with the directions, and to the satisfaction, of the architect, the several works shown and described in the drawings and specification, and such further drawings, details, and instructions as may from time to time be given by the architect in explanation. The contractors hereby admit that the said plans and specification are sufficient for their intended purposes, and that the works can be successfully executed in accordance therewith, without any additional or extra work other than such work as is necessarily implied therein, or to be inferred therefrom upon a fair and liberal construction. In case of any apparent discrepancy between the drawings and specification, the architect is to decide which shall be followed. (Before the contract is signed the contractors should have ample opportunity of examining drawings and specification, and all necessary details should be prepared and furnished before the signing of the contract. The new conditions of the Institute provide for an infringement of this desirable rule by stipulating that the architect shall furnish details within a certain time after the receipt of request for same.) A complete copy of the drawings and specification shall be furnished by the architect free of cost to the contractors, and shall be kept on the works until completion of the contract, for the joint use of the contractors and the architect, or their representatives.

No. 2.—The contractors shall commence the said works within one week after date of signing of the contract, and shall actively prosecute the same from day to day until the same works shall in all respects be completed within _____ months from the date of such signing of the contract as aforesaid, provided always that in case the contractors shall be prevented from complying with this article by any strike, lock-out, or combination by or among the workmen, or by any exceptionally inclement weather, or other causes that in the judgment of the architect may be beyond the contractors' control, the architect shall extend the time for completion of the works for such period as he may think fit, and in the event of any such delay occurring the contractors shall at once inform the architect of the fact in writing, and request him to make such extension of the time for completion.

No. 3.—The contractors are to set out the works and are to be responsible for any errors that may arise, either in the original setting out or during the progress of the works and are to amend such errors whenever required so to do by the architect.

No. 4.—All materials to be used in the said works, although not particularly mentioned in the specification and, save as otherwise provided by the specification, or as may hereafter be otherwise required in writing by the architect, shall be supplied and furnished by the contractors.

No. 5.—All materials and workmanship shall be of precisely the kind and quality described in the specification, and the contractors shall, upon the request of the architect, furnish him with vouchers, or apply such tests as he may direct to prove that the materials and workmanship are such as are specified.

No. 6.—The contractors shall within one week from the completion of the said works remove all scaffolding, plant, materials, and rubbish from the premises, and leave premises in a clean and proper state.

No. 7.—The architect is to have at all times access to the works, which are to be under his control, with power to order any deviation therein or extra works he may consider necessary. The clerk of works is in his absence to be considered his deputy, and the reasonable directions of the clerk of works are to be attended to by the contractors, subject to appeal to the architect. And the contractors shall afford the clerk of works every reasonable facility for examining the works and materials. The clerk of works shall have no power to direct any variation in the contract, or to give orders for any extra works. The architect may require the contractors to dismiss the foreman or any person employed on the works who may be incompetent or misconduct himself, and such person shall not be again employed on the works without the architect's consent. The contractors are not to sublet the works, or any part thereof, without the consent, in writing, of the architect.

No. 8.—The contractors are not to deviate from the drawings or specification unless upon the directions of the architect shown by an order in writing, or by any plan or drawing expressly given and signed by the architect as an extra or variation or unless required to comply with the provisions of any Act of Parliament or the requirements of any local authority. No charge for day work is to be allowed as such unless a written authority by the architect shall expressly say it is to be done as day work, or unless the work cannot, from its character, be reasonably valued by measurements. All vouchers for day work are to be delivered to the architect within fourteen days after the work may have been executed.

No. 9.—Any variation made in carrying out the works is not to vitiate the contract, but the value of any such variation, for which a price may not have been previously given and agreed upon is to be measured and valued and certified for by the architect, and added to or deducted from the amount of contract. For the purposes of valuation of such variation the Bill of Quantities and prices therein are to be used as a basis of estimate. And for this purpose a verified copy of the original priced bills of quantities shall be deposited with the architect within one week after the signing of the contract.

No. 10.—All materials, including scaffolding, tools, implements, machinery, plant, and effects, which may from time to time during the progress of the works be in, upon, or about the premises for use in the said works, shall be deemed to be the absolute property of the employer. But the contractors shall, notwithstanding, be solely responsible for the loss or destruction thereof, and for any damage which may happen thereto by fire, tempest, or any other cause whatsoever, and the contractors shall likwise be liable to make good all damage which may happen to persons or things from any cause whatever during the progress of the works. The contractors are not to bring upon the premises any other materials, scaffolding, tools, implements, machinery, plant, or other matters except those which are actually required for the carrying out of these works.

No. 11.—In executing the said works, the contractors shall not go into possession of, enter upon, or in any way use any part of the land or premises the property of the employer other than that which the architect shall have given permission for the contractors to enter upon for carrying out the said works.

No. 12.—The architect shall have full power to require the removal from the premises of all materials which in his opinion are not in accordance with the specification or the instructions of the architect, and to require the substitution of proper materials or workmanship in accordance with the drawings and specification or instructions. And the contractors shall forthwith carry out such order or requirements. The contractors shall, when so requested by the architect, within such time as the architect shall name, open for inspection any work covered up. And in the event of the contractors refusing or neglecting to comply with such request, the architect may employ any other person or persons to open up the same.

No. 13.—In case at any time during the progress of the works any unnecessary delay shall, in the opinion of the architect, occur in the carrying on of the same, and the architect shall give to the contractors, or leave at their then or last-known place of abode or business, or on the said premises, a written notice to proceed with the said works, and the contractors shall not so proceed to the satisfaction of the architect within fourteen days after such notice shall have been so given or left; or in case the contractors shall at any time or times neglect or omit to pull down or remove any work or materials which the architect shall have certified in writing to be defective or not according to contract within five days after written notice so to do shall have been given to them by the architect, or left as aforesaid, or within such further time as may be specified in the notice; or in case the contractor shall assign, sub-let, or charge this contract, or any part thereof, without the permission of the architect; then and in such case the employer shall be at liberty, without vitiating this contract, to take the said works wholly or partially out of the hands of the contractors and to employ any other person or persons to execute the same, and for that purpose to take possession of and use all materials, scaffolding, plant, tools, implements and goods on or about the said works, and all expenses or damages thereby incurred shall be ascertained and certified by the architect, and shall be paid by the contractors to the employer.

No. 14.—The contractors shall maintain and keep the works in good and permanent repair,

state, and condition, to the satisfaction of the architect, for months after the date, when the architect shall certify that the works have been completed in a satisfactory manner. And any defects, shrinkage, or other faults in the works which may appear within such time from the completion of the building, are to be amended and made good by the contractors at their own cost, and in case of default the employer may employ and pay other persons to amend and make good such defects, shrinkage, or other faults or damage.

No. 15.—Any cost incurred by the employer in carrying out any works for which by this contract he is entitled to employ any other person or persons in default of the contractors, may be recovered by the employer from the contractors, or deducted from any money or monies that may be due to the contractors from the employer.

TRADE CATALOGUES.

MESSRS. MOSSES & MITCHELL send us a price list and description of their "vulcanised fibre" and some of the uses to which it can be put, most of which are well known; but we may mention their "Insulating Saddle Staples" for use in fastening electric-light conductors and telephone and messenger wires. The insulating saddle is treated with a moisture-repelling compound, which also coats the metal in such a way as to prevent corrosion and the leakage which would ordinarily take place where the old form of metal staple is used. It is claimed that these possess all the strength of metal staples, and do not abrade the insulation on the wires.——The General Electric Company send a monthly leaflet of their electric apparatus, which is intended to form a serial statement of their improvements, new apparatus, or alterations in prices. —— Messrs. Buck & Hickman (London) send us their new and very extensive illustrated and priced catalogue of patent and improved tools and machinery for tool-working. This includes boring and tapping machines, lathes for various purposes (screw-cutting, brass-finishing, turning and chasing, facing pipe-flanges, &c.), turners' and brass-finishers' tool-boxes, milling machines, planing machines, shaping and drilling machines, punching and shearing machines, saws of all kinds, gas and steam engines, saw-benches, band-saws, and combination band and circular saw machines. Great attention seems to have been paid to the band-saws, which include several special contrivances, such as a steel compensating spring, to allow for the free expansion and contraction of the saw while at work, and in the band and circular saw machine a patent arrangement of countershaft for driving, whereby two separate motions are obtained from one countershaft, so that the workman can use instantly either the band-saw or the circular saw. Besides these the catalogue illustrates plate-bending machines, carving tools, paint-mills, pumps, in short everything that can be required to stock a large workshop establishment.——The Stuart's Granolithic Stone Co. (London) send us an album (the "Granolithic Souvenir") containing a number of illustrations of their works, with photographs of various tests of their material, and also of buildings in which the material has been used. Among other things there is a photograph of a granolithic slab 10 ft. square which is stated to have carried twenty-two tons without any sign of failure.—— Messrs. Powis Bale & Co. (London) send us List No. 2 of their stone-working machinery, illustrating circular and horizontal stone-sawing machines, rock drills, stone moulding and planing machines; marble turning lathe, &c. ——Messrs. G. A. Harvey & Co. (London) send a large catalogue of metal work for various purposes—chimneys, water-heaters, weather vanes, snow guards, zinc roofing tiles, ventilators, corn-bins, buckets, stove pipes; also plant for farms and country houses, such as hutches, pigeon-cotes, cattle troughs, &c.; and an immense variety of perforated zinc patterns.—— Messrs. Lumby, Son, & Wood (Halifax) send us a supplementary catalogue under the title, "Our 1897 Specialities," including various forms of boiler, among others the "Marlor" boiler, which is designed so that any sediment in the boiler falls below the fire bars, where it cannot injure the boiler, and where special means of flushing and drawing off are provided. One of the best things in the catalogue, and one of general application, is the non-radiating nickelled handle, which does not get hot, and has moreover a very neat appearance.——The Expanded Metal Co. (London) send us a pamphlet explaining and illustrating the various methods in which this material can be usefully applied in construction. It contains a good deal of practical information in a small space, and will be of use to architects who intend to make use of expanded metal in fireproof and other constructions.——Mr. John P. White (Pyghtle Works, Bedford) sends us a catalogue of some of his grates and chimney pieces, the illustrations to which are quite above the ordinary catalogue level, being artistic drawings of good designs by known artists. The main practical object of the publication is to recommend and describe the "Portcullis Fire Screen and Blower," an arrangement by which a descending sheet of brass, running up and down in grooves at either side of the grate, and counterbalanced by weights, like an ordinary sash window, is made available as a screen to a non-lighted fire, or as a blower (when required) to a lighted one.——Messrs. Strode & Co. send us a book of devices and mottoes for illumination, both for gas and electric light, suitable to the festivities of next month.——Messrs. Alfred Chapman send us a print of the Diamond Jubilee wall decoration which they have prepared; a good piece of decorative design working in the symbolical flowers of England, Scotland, and Ireland. —— Mr. W. J. Pethybridge (London) sends us some specimens of papers made by him as specially suitable for collotype printing. ——Messrs. Winstone & Co. send us a catalogue of grates and ranges, which appear to be very good in a practical sense, though the ornamental designs have little to recommend them. There appear to be some new contrivances for raising and lowering the fires in ranges with greater convenience. Among the special objects illustrated is a revolving or reversible fire-grate for gas or coal, according to which side is turned to the front.——Messrs. Adams & Co. send us their new catalogue of sanitary appliances, which as usual is admirably got up, and contains illustrations of some important improvements and new patents. Among these may be mentioned the Helios pedestal closet, which is a valve closet made entirely in glazed earthenware, valve and all; the "Helios" lavatory range, especially intended for schools, for strength and cleanliness combined, the basins are carried on solid glazed-ware pedestals, and with glazed-ware pillar waste pipes; the "Hadley" anti-syphonic trap, which is said to render the syphoning out of the seal water impossible, by means of an enlargement on the upcast arm of the syphon, containing sufficient water to compensate for loss; and the glazed-ware tubs, in sets, for public washhouses. We may point out that in the designs for lavatory ranges, the plain and massive-looking designs, such as are shown on pages 42 and 47, are far superior in appearance, for all situations, than those which are intended to be ornamental, as on pages 46, 48, and 49; architects would certainly prefer the plainer ones.

OBITUARY.

SIR A. W. FRANKS.—By the death of Sir A. Wollaston Franks, K.C.B., which took place in London on Friday last week, after an illness of some weeks' duration, the Society of Antiquaries has lost its President, and the archæological world one of its most learned exponents. Augustus Wollaston Franks was born at Geneva in 1826, and was educated at Eton, and at Trinity College, Cambridge, where he graduated in 1849. His antiquarian tastes had then already begun to develop themselves, and within a few months of taking his degree he published an excellent "Book of Ornamental Glazing Quarries." In 1851, he entered the British Museum as an assistant in the Department of Antiquities, under Mr. Hawkins, the then keeper. The miscellaneous character of the collections with which Mr. Franks thus became associated diverted his attention from architectural antiquities, and henceforth his mind was given to the acquisition of that vast store of knowledge of all branches of archæology, for which he afterwards became so distinguished. In 1853, Mr. Franks was elected Fellow of the Society of Antiquaries. The *Proceedings* of the Society show how regularly he attended its meetings and how numerous and varied were the objects of interest which he constantly exhibited and discussed. In 1858, on the resignation of Sir Henry Ellis, he was unanimously elected to the responsible post of Director of the Society, an office he held until 1867, and again from 1872 to 1880. In 1892, Mr. Franks was unanimously chosen President of the Society, which distinguished position he continued to hold until his death. Of Mr. Franks's official connexion with the British Museum, that institution affords abundant evidence. Through his personal influence with their owners, the splendid Christy, Burges, Slade, and Henderson collections were bequeathed to the nation, and to them were added, by his own generosity, the valuable series of examples of Oriental and English pottery and porcelain. Of the numerous gifts with which from time to time he filled up gaps or materially augmented defective groups, it is impossible to speak in detail, for there is hardly a case in the Department over which he presided which does not contain examples of his liberality. His unostentatious munificence, as well as his valuable services, were tardily recognised in 1888 by his creation as Companion of the Order of the Bath, and in 1894 he was promoted to be Knight Commander of the same Order. Sir Wollaston Franks retired from the British Museum in 1895, but did not long enjoy his well-earned leisure. He was in his seventy-second year at the time of his death.

MR. C. J. PHIPPS.—We regret to have to record the sudden and unexpected death of this architect, whose name has become so well known in connexion chiefly with theatre architecture. Mr. Charles John Phipps, F.S.A., was born at Bath in the year 1835. He was articled with Messrs. Wilson & Fuller, architects, of that city, and remained in their office until June, 1857. Almost immediately he commenced practice for himself, and in 1862 he successfully competed for the design for the rebuilding of the Bath Theatre. This theatre proving so successful, other work of a similar kind soon followed, and for the last thirty years Mr. Phipps has been constantly engaged in building new theatres in London and the provinces and elsewhere. Of his recent works the new buildings now in course of construction in the Haymarket rank as the most important. Of this building one portion, namely, Her Majesty's Theatre, has been completed, and the rest is rapidly progressing. Amongst the works executed in London by Mr. Phipps were the following theatres and concert-halls:—The Queen's, Long Acre (now pulled down); the Gaiety; the Vaudeville; the Strand; Sadlers Wells; the Variety, Hoxton; the Haymarket; the Savoy; the Princesses'; the Prince of Wales'; the Shaftesbury; the Lyric; Hengler's Cirque (subsequently altered by the architect into the National Skating Palace); the Theatre of the Lyric Club; the Queen's Hall (jointly with Mr. Knightley); and Her Majesty's Theatre, Haymarket (just completed). In the provinces he erected theatres at Bath, Bristol, Plymouth, Torquay, Brighton, Eastbourne, Swansea, Worcester, Nottingham, Portsmouth, Sheffield, South Shields, Darlington, Hastings, Leicester, (the Opera House), Northampton (the Opera House), Leamington (the Opera House), Liverpool (the Rotunda and the reconstruction of the Alexandra Theatre), Wolverhampton, and Dover. In Scotland he built, at Edinburgh, the Theatre Royal (first rebuilding, 1873, second rebuilding, 1883), and the Lyceum Theatre; at Glasgow, the Theatre Royal (first rebuilding, 1880, second rebuilding, 1895); at Dumfries, the Theatre Royal; at Aberdeen, the Opera House. In Ireland he built, at Dublin, the Gaiety Theatre and the Leinster Hall; at Belfast, the Theatre Royal; at Londonderry, the Theatre Royal; and at Cork, the Theatre Royal and Opera House. Among other public buildings erected from his designs may be named the Devonshire Club, the Lyric Club, the Gaiety Restaurant, the Star Life Assurance Society's offices, the "Star and Garter Hotel" (new pavilion), the Savoy Turkish Baths, &c.

MR. DAVID GREIG.—The death took place, on the 20th inst., at his residence, Queen's-crescent, Edinburgh, after a short illness, of Mr. David Greig, senior partner of the firm of David Greig & Co., builders, Spittalfield-crescent. He was a member of the Dean of Guild Court.

GENERAL BUILDING NEWS.

THE NEW TOWN HALL, SHEFFIELD.—On the 21st inst., the new Town Hall at Sheffield was opened by the Queen. Illustrations and descriptions of the building have appeared in our issues for June 28, 1890; June 20, 1891; July 11, 1891; and May 21, 1892; while illustrations of the sculptured frieze appeared on July 13 and November 16, 1895. An illustration of the entrance gates was also given in our issue of February 13 this year. The architect was Mr. E. W. Mountford, and the sculpture work was by Mr. F. W. Pomeroy.

REPAIR OF LINLITHGOW PALACE.—Following the course adopted for the past two or three years, the Government have voted another sum for the repair and preservation of Linlithgow Palace. In past years the work has consisted in repairing the more dilapidated parts of the ancient structure, such as relaying the floors, renewing the wall heads, &c. This year it is intended to direct attention to the north side of the building and to repair and improve the walls, which in recent years have shown signs of rapid decay. The object of the Board of Works in carrying out these repairs is to have the historical "pile" put into a proper state of preservation.—*Glasgow Evening Times.*

BATT'S HOTEL, DOVER-STREET.—This hotel has been recently undergoing extensive alteration and renovation. In place of a stable and other outbuildings in the rear, a dining-room, kitchen, and service rooms have been built. Messrs. Hilder & Edge, of Great Pulteney-street, have carried out

this work, including the redecoration of the whole of the building. The following specialists have also been employed :—Messrs. Smith & Stevens have supplied passenger and dinner lifts ; Messrs. Dent & Hellyer have fitted up entirely new sanitary fittings throughout, and have laid a new system of drainage ; electric lighting has been installed by Messrs. Laing, Wharton, & Down, electric bells and telephones by Mr. C. E. Zimdars, and hot water, cooking and heating apparatus by Messrs. Charles Heap & Co. Mr. R. Griggs is the architect.

BERKELEY HOTEL, PICCADILLY.—On the 12th inst. this hotel and restaurant was reopened to the public, having been closed since the beginning of December last. During this interval extensive structural alterations have been made in the old portion of the building, and a new portion, seven stories in height, and covering the site of 73 and 74, Piccadilly, has been added. In the old portion the improvements include the enlargement of the restaurant by removing the main walls on the ground floor, a rearrangement of the basement offices, the introduction of an electric passenger-lift, and complete redecoration. In the new portion an entrance hall to the restaurant, a lounge and cloak rooms, have been provided on the ground floor, and suites of rooms, including reception, bed, and dressing rooms, with bath room, &c., on each upper floor. The whole of the basement of the new portion is occupied by kitchens, larders, and service rooms. The architectural treatment of the exterior was limited to a reproduction of the details of the old building, a stone portico to the restaurant entrance in Piccadilly being the only new feature. The constructional steel work and some intricate shoring were designed by Messrs. Reade & Reilly. The preliminary works and foundations were carried out by Mr. T. Stevens, of South Molton-street. The general contractors were Messrs. Kirk & Randall, of Woolwich, who, commencing at the beginning of the year, have carried out and completed the whole of the work in five months. The fireproof floors were executed by Messrs. Dennett & Ingle ; the decorations generally by Messrs. Campbell Smith & Co. ; the decoration of the restaurant and entrance by Messrs. Warings ; the passenger and service lifts by the Otis Elevator Company ; the cooking range by Messrs. Cubain Frères, of Paris ; the smaller cooking apparatus and kitchen fittings generally, also the steam and hot water services and electric lighting, by Messrs. Strode & Co.; the fittings for the electric light being also designed and made by their firm, and they have also provided an automatic hot water supply for the hotel of over 1,000 gals. per hour if required ; the electric bells and telephones by Messrs. Jackson & Coleby ; the plumbing, drainage, and sanitary fittings by Messrs. Dent & Hellyer ; and the new furniture by Messrs. Marris, King, & Norton, of Birmingham. Mr. May represented Messrs. Kirk & Randall, and Mr. T. S. Inglis was the clerk of works. The architect is Mr. Robert Griggs (London).

THE NEW WORKHOUSE QUESTION, HUNSLET.—At a meeting a few days ago of the Hunslet Board of Guardians the question of the erection of a new workhouse was again discussed at length. Mr. J. Farrar moved that the architect (Mr. Dodgshun) be requested to complete the plans of the suggested alterations on the existing workhouse, to show the alterations in the children's ward, and the additional accommodation to be obtained, and also to prepare plans for the erection of new vagrant wards. He said it was premature to propose that they should erect a new workhouse at a cost of 40,000*l.* or 50,000*l.* —Mr. J. Hargreaves seconded the resolution, and said that in his opinion the new workhouse would cost nearer 50,000*l.* than 40,000*l.* The proposed alterations on the present workhouse would provide additional accommodation for thirty-six adults, fifteen children, and eight old persons.—Dr. Hawkyard asked the mover and seconder of the resolution if they would agree to substitute this motion :—"That Mr. Dodgshun be asked to prepare plans to show new receiving wards, new tramp wards, how the present workhouse could be extended so as to give more room for the old men, and to provide a larger kitchen and new bath-rooms, and how the school building could be adapted for fifteen children, and the rest of the building be adapted for hospital purposes, with suitable accommodation for nurses." Mr. Farrar and Mr. Hargreaves agreed to accept this resolution, and after some further discussion the resolution was carried.

POLICE BUILDINGS, KILMARNOCK.—Plans have been prepared by Mr. Walter W. Reid, and have been approved of, for the erection of the new police buildings in Sturrock-street, Kilmarnock. The external walls are to be built of white stone. On the ground-floor there will be the Chief Constable's room, charge-room, guard-room, production-room, lavatory accommodation, and eight cells. The court-room will be in the upper flat, access for the public being obtained by an entrance from Market-lane, while there is a private staircase off Sturrock-street for the use of the magistrates and witnesses. There is also a room for the magistrates, and separate rooms for male and female witnesses. Eight cells are situated in this flat, and lavatory accommodation is likewise provided there. The building will be heated with hot-water pipes, the heating-chamber being in the basement, where there is also a lamp-room.

ALTERATIONS AT EAST FREE CHURCH, PETERHEAD.—Operations have been commenced for the entire reconstruction and renovation of the interior of the Free Church, St. Peter-street, Peterhead. The scheme comprises the reslating of the church, reconstructing the interior, building a suitable hall and vestry, &c. The architects are Messrs. J. & R. M'Millan, Aberdeen, and the contractors are : mason work, Wm. Hadden, Peterhead ; joiner work, J. B. Dickie, Peterhead ; slater, Wm. Simpson, Peterhead ; plasterer, Wm. Shand, Peterhead ; plumber, John Ferguson, Peterhead ; painter, George Cran, Peterhead ; glazier, Edward Copland, Aberdeen.

PRESBYTERIAN CHURCH, WALTON, LANCASHIRE.—The foundation stone of a new Presbyterian Church was laid recently at the corner of Rice-lane and Orrell-lane, Walton. The building scheme includes purchase of site, erection of lecture hall, with requisite committee-rooms, &c., and church. The material used will be Yorkshire shoddies, with red stone dressings, and the principal entrances will be through an open porch, minor porch, and vestibule, as well as through cloak-rooms, &c. The inside length of the church will be 75 ft. ; the breadth across the body of the edifice, 37 ft. 6 in. ; across the transepts, 40 ft. 6 in. ; and the size of the organ chamber will be 19 ft. by 9 ft. About 450 sittings will be provided, and the plans permit the future erection of a gallery to give accommodation for another 100 seats. A vestry, session-house, infants' room, and ladies' room are also included, communication with the adjoining lecture hall being obtained by two staircases, the hall being 50 ft. by 31 ft. 6 in., and capable of seating 300 persons. The contractors are Messrs. J. & G. Chappell ; the masonry is in the hands of Mr. James M'Dermot ; and the architect is Mr. R. G. Sykes.

ST. LUKE'S CHURCH, DEEPLISH, ROCHDALE.—The eastern portion of this church (consisting of chancel, transepts, organ chamber, vestries, &c.) was erected some ten years ago, and building operations have just been commenced of the new portion. The work now being erected consists of a nave, side aisles, &c., to be used as passages only, and a baptistry at the west end. The principal entrance is through a porch on the south side, while another entrance is also provided on the north. The aisles and baptistry are divided from the nave by a lofty arcade, the baptistry floor being raised above the nave level. Externally and internally the church will be faced with small pressed bricks, relieved with red Rainhill stone dressings. The roofs will be covered with green slates, and the windows are to be filled with tinted cathedral glass. The internal woodwork is to be of pitch-pine, unvarnished, the floors of the aisles and baptistry to be tiled, the latter with encaustic tiles in ornamental designs. The style adopted is Early English. The works are being carried out from the designs, and under the supervision, of Mr. R. Knill-Freeman, of Bolton and Manchester, the architect for the formerly-erected portion.

BAPTIST CHURCH, BELFAST.—Three memorial-stones were laid recently of a new Baptist church, which is in course of erection on the Antrim-road, Belfast. The church and schools are built of Belfast perforated brick, with red sandstone dressings, and consist of a church to accommodate 600 adults and school to accommodate 300 children, with vestries and lavatories attached. On either side of the main entrance are the entrances to the main gallery, which extends across the end of the church. The principal feature of the interior is the baptistry arrangements, which consist of large baptistry lined with marble and porcelain, the steps to which lead directly from the vestries' doors, and immediately behind the baptistry is an ornamental Gothic screen, partly supporting the choir gallery, the steps to which lead up from behind the screen. These arrangements are all contained within a large chancel-like recess, separated from the main body of the church by a large flat arch of moulded brick and stone. The school building has kitchen arrangements and yard. The cost of both buildings is 3,700*l.* The architect is Mr. J. A. Hanna, of Belfast, and the contractors are Messrs. Henry Laverty & Sons. Messrs. Musgrave & Co. supply the heating apparatus, and the plumbing work is being done by Mr. J. J. Milliken, Belfast.

HOME FOR NURSES, SWANSEA.—It is proposed to celebrate the Jubilee at Swansea by erecting in connexion with the hospital a home for nurses. It is intended to build the new block of buildings at the rear of the administrative block and connected with it by a corridor. In the basement it is proposed to provide the heating apparatus. On the ground floor accommodation is provided for eight nurses. On the first floor accommodation is provided for fifteen nurses. Overlooking the lawn will be a verandah and a small tower at the corner of the building, which will be used as a ventilation shaft. The plans for this work have been prepared by Messrs. Wilson & Moxham, architects, who are now carrying out the new operating theatre at the hospital.

ST. PETER'S CHURCH, TORRY, ABERDEEN.—The new Episcopal church of St. Peter is at present in course of erection on the north side of Victoria-road, Torry. The building, when completed, will consist of nave, with porches on the north and south sides ; chancel, with a chapel and bell-turret on the south ; and sacristy and choir vestry on the north sides. With the exception of the window tracery, which will be of freestone, the whole of the exterior stonework will be of pink granite, the general surface of the walls of thin split-faced courses. The roof, covered with Scotch slates, will be continuous over nave and chancel, its apex being 68 ft. from the floor of the nave. The height of the nave walls will be 47 ft. The nave is 4 ft. 6 in. lower than the level of Victoria-road, with steps at the west end down from that level extending the whole width of nave and aisles. The nave arcade consists of five arches with piers 10 ft. apart and 26 ft. 3 in. from the floor to the springing. These piers are attached to the aisle wall by internal buttresses. The division between nave and chancel is marked by a pier 5 ft. 6 in. wide, and pierced with doorway for a rood loft, reached by a turret stair on the south, and also from the organ-gallery on the north side. The altar is raised twelve steps above the nave floor. The south aisle of the nave leads by steps up to the side chapel, 38 ft. by 15 ft., which will be divided from the chancel by an iron grille. This chapel will have a separate door from Victoria-road. The north aisle continues by the side of the chancel, and is connected with it by a few steps. The upper part of the church will be lighted by a series of eight clearstory windows on either side and a wheel window in the west gable 11 ft. in diameter. The total length of the church internally is 116 ft. 6 in., the extreme width 52 ft. 6 in., and it will provide accommodation for about 500 persons. The contractor for the mason work is Mr. John Morgan, Aberdeen. The architects are Messrs. Kinross & Tarbolton, Edinburgh.

PREMISES, MARKET-STREET, EDINBURGH.—New premises for Mr. Macpherson, of the Cockburn Hotel, Edinburgh, are to be erected in Market-street. The building has been designed in the Baronial style. It is to be used in connexion with the hotel to replace the premises in Cockburn-street which the city has acquired, the ground being necessary for the proposed extension of the Council Chambers. The new premises will be lighted by electricity, and heated by hot water, as well as by open fires. The architect under whose directions the work will be carried out is Mr. John G. Adams.

MISSION HALL, HALE END, ESSEX.—The foundation stone has just been laid at Hale End, by Mrs. Andrew Johnston, of a new Union Mission Hall. The new building is being erected at the back of the present hall. It is to be of red brick with stone facings, and is to have a slate roof boarded inside. The premises comprise the hall itself, which is 50 ft. by 34 ft., and is to accommodate 400 persons. The entrance to the hall from outside is by a porch. In the rear are three class-rooms and a kitchen. The architect is Mr. Boreham, of London, and the builders Messrs. Thos. Osborne & Sons, Woodford.

PUBLIC SCHOOL, YOKER, NEAR GLASGOW.—This school is in course of erection in Elgin-street, Yoker, for the Old Kilpatrick School Board. The building is three stories in height, the ground floor being utilised for the infant department and the First Standard, while the other standards are located on the first and second floors. The headmaster and mistress have their private rooms on the ground floor in close proximity to the respective entrances for boys and girls, while rooms are also provided for the male and female assistants on each floor. On the upper floor a portion will be utilised as a cookery room, and there is also provision in the way of cloak rooms and other offices for both scholars and teachers. The cost is estimated at about 13,000*l.*, and accommodation will be given for some 1,250 scholars. The whole work is being carried out from the plans of Mr. Henry Higgins, jun., architect, Glasgow.

PROPOSED NEW MUSIC HALL FOR WOLVERHAMPTON.—A special sessions for transferring licences was held at the Wolverhampton Police Court on the 22nd inst., when an application was made for the sanction of various alterations to the Empire Music Hall and Vaults, Queen-square and Cheapside. Mr. Ward, of the firm of Messrs. Owen & Ward, who is the architect of the proposed building, said that there would be nine entrances, and no doorway would be of less width than 5 ft. There would be a front in Cheapside in a way the Public Works Committee would suggest. The building would be lighted by electricity, but there would be a supply of gas in case the electric light should fail. It was explained that the Borough Surveyor was satisfied with the plans, but had suggested a fire screen, which would be provided. The cost will be 42,000*l.* The magistrates retired to consider the matter, and on their return the Mayor said that the application had been unanimously granted by the magistrates, on the understanding that the elevation in Cheapside must be satisfactory to the Public Works Committee.

PROPOSED NEW TECHNICAL SCHOOLS, SWANSEA.—It is proposed to erect new Technical Schools at Swansea, from plans prepared by Mr. H. Wills. The two new buildings to be erected comprise accommodation for the teaching of chemistry, metallurgy, physics, engineering, and also for intermediate purposes. They will form a L-shaped block, to the south-west of the existing buildings, to which they will be connected with a covered cloister, and with which they will be built in harmony. The new buildings will also comprise accommodation for the caretaker, and a Committee-room. The technical portion of the new schools will cost about 9,000*l.*, and the fittings and apparatus about 4,500*l.*

SAVINGS BANK, KEYHAM, DEVONSHIRE.—Branch premises for the Union Savings Bank at Keyham are being erected by the contractor, Mr. William

Littleton. The architect is Mr. Henry George Luff, of Devonport.

ALTERATIONS TO A BANK, REIGATE.—The London and County Bank has recently been altered and improved. The work has been executed by local firms, and Messrs. Baker & Penfold were the architects, and Mr. R. Killick was the builder. Messrs. R. Penfold & Son did the stone masonry.

NEW CHURCH, PENARTH.—The new English Congregational Church at Penarth, was opened a few days ago. The most noticeable feature externally is the tower at the right-hand corner of the main building, which is surmounted by a spire rising to a height of 112 ft. The spire is built chiefly of Bath stone, whilst the church, schoolroom, vestries, and offices are carried out in grey Newbridge stone, with the quoins of Bath stone. The church building is capable of accommodating 600 adults, and consists of a nave and chancel, the latter raised above the floor of the nave, and within it are placed the choir stalls with the organ facing the congregation. At the northern side of the chancel arch is the pulpit, of mahogany and pitch pine, the whole of the seating being of this wood with mahogany mouldings. There are no galleries, with the exception of a small one over the vestibule. Messrs. Habershon & Fawckner, architects, Newport and Cardiff, prepared the designs of the structure; and Mr. D. G. Price, Penarth, carried out the work. The entire cost of the building is about 6,500*l.*

BUSINESS PREMISES, ABERDEEN.—New premises are to be erected for Messrs. Sangster & Henderson in Broad-street, Aberdeen. The buildings were designed by Mr. R. G. Wilson, architect; and the contractors are:—Masonry, Messrs. Pringle & Slessor; carpentry, Messrs. Watt & Clark; slating, Mr. James Wilson; plastering, Mr. George Gibb; painting and glazing, Messrs. J. Garvie & Sons; ironwork, Messrs. M'Kinnon & Co.

CHURCH, HYSON GREEN, NOTTINGHAMSHIRE.—On the 20th inst. Lady Laura Ridding laid the foundation-stone of a new church on Bobbers Mill-road, Hyson Green. The church, which is to seat 600, is being built of Bath stone and bricks from Loughborough and Sileby. Inside, the building will be 110 ft. long, 52 ft. broad, and 45 ft. high to the top of the nave roof, and the church will be lighted by a large window at the west end, and by windows in the aisles and clearstories. The architects are Messrs. Christian, Caröe, & Purday, of London; and the builders Messrs. J. Norris & Sons, of Ascot.

BUSINESS PREMISES, NEWCASTLE.—Messrs. H. & A. Hunter, livery stable proprietors and job masters, Newcastle, have just enlarged their premises. The additions have been made in communication with the existing building behind Trinity Church, New Bridge-street, one entrance being from the old yard and the other from Higham-place. The sale yard is 100 ft. long by 33 ft. wide. On the right side of the entrance is a ladies' waiting room and lavatory, and on the opposite side are the caretaker's house and the harness rooms, with a store room above. For the sale yard light is obtained from an iron-girdered glass roof, 40 ft. high. On the left side of the yard are ten loose-boxes, and on the right side there are fourteen stall-stables. Altogether on the ground floor there are fifty stalls and boxes. At the west end of the sale yard is a store room, also the engine room, properly fitted out to raise the patent hoist and run the dynamo for the electric light throughout the building. Over the loose-boxes on the ground floor is a large balcony for visitors, 90 ft. long by 8 ft. wide; and another balcony on the opposite side, to be reserved for ladies, 100 ft. long by 4 ft. 6 in. wide. The stable on the first floor, with access from the ground floor, is 114 ft. long by 30 ft. wide, with stalls, and contains boxes for thirty-eight horses Adjoining is a granary, 51 ft. by 24 ft., with an apartment for the general office. On the second floor is a carriage repository, 114 ft. by 31 ft., in direct communication with the hoist, and another granary, 59 ft. by 24 ft., and a similar loft above this room is situated on the third floor. Mr. W. Lister Newcombe, Newcastle, was the architect; the chief constructor, including the stable fittings, was Mr. W. Machlin; the cement floors have been laid by Messrs. W. B. Wilkinson & Co.; the plumbing by Mr. Rowell; the metal castings by Messrs. Swinney Brothers, Morpeth; the iron roofs by Messrs. Hindson, Gateshead; the painting and colouring by Messrs. Richardson, Newcastle; the stoves and hardware by Messrs. Emly & Sons, Newcastle; the hoists by the Otis Company; the gas engine and shafting by the Otto Company, Newcastle; and the electric lighting by the Corlett Electric Company, Newcastle; while Mr. C. Dixon was clerk of the works.

RESTORATION OF BISHOP'S WALTHAM PARISH CHURCH, HANTS.—For some time past structural repairs have been in progress at the parish church of St. Peter's, Bishop's Waltham. The main outlines of the work of restoration are as follows:—The south gallery with the three dormer windows specially put in to light it have been removed, and a new arcade built to agree with the northern arcade, thus bringing the two aisles into harmony. The columns carrying the arches of the twelfth century north arcade, which, owing to the spreading of the main roof, had been pushed out of the upright, have also been rebuilt on a substantial foundation, and solid stone piers have taken the place of hollow ones. New plates have been inserted to carry the roofs of the nave and aisles, and the rafters bolted thereto, and tie rods have been fixed to keep these roofs, as well as that of the chancel, from spreading. The old flooring has been removed, and, the earth having been excavated to some depth and replaced by concrete, wood blocks have been laid all over the church on a cement foundation. The chancel arch, which was formerly much distorted, has been put into shape, one side of the arch having to be entirely rebuilt. The chancel roof has had to be entirely stripped, as many of the rafters were decayed. These have been replaced, and the roof re-tiled. The outer side of the roof of the south aisle has been similarly treated. The hot-water pipes have been placed under the level of the floor, and a new and more powerful boiler supplied. The small gallery has been fitted up for the school children. The old Communion rails have been cleaned and scraped to show the plain oak, and are in keeping with the pulpit and the new choir stalls, which are of plain oak and of local handiwork, having been carried out by Mr. Charles Churcher. The work has been done under the superintendence of Mr. T. G. Jackson, R.A., and his clerk of works, Mr. Mockford.—*Hampshire Chronicle.*

NEW INFIRMARY, PAISLEY.—The memorial stone of the new infirmary being erected in Paisley was laid recently. The infirmary is being erected in Barbour Park, Calside, from plans prepared by Mr. T. Graham Abercrombie, Paisley. It consists generally of two stories and attics, with the front portions of the wings, and also the central block, slightly jutting out from the main building. The number of beds provided will be between 140 and 150, and there are different departments for children and for men and women. The cost, it is understood, will be 72,000*l.*

PARISH ROOM, ELY.—A meeting was held at the Vicarage, Ely, recently, when it was decided to build a Parish Room in commemoration of the Queen's Diamond Jubilee at a cost of 800*l.* The room will accommodate 350 persons. The architects (Messrs. James and Sweet-Escott, of Cardiff) were instructed to proceed with the plans and to invite tenders for the erection of the building upon a site given by Lord Windsor, situate at the back of the post-office.

IMPROVEMENTS AT HUTTON CASTLE, BERWICKSHIRE.—Improvements are being carried out at Hutton Castle, Berwickshire, the property of Lord Tweedmouth. Two new approaches to the castle have been made, and a lodge has been constructed at the west drive. Lord Tweedmouth intends to provide additional bed-room accommodation and buildings for servants, &c. Further stable accommodation will also be erected, but arrangements have not yet been made for these. The old tower is to be made habitable, the centre part being raised one story. The new portions will have asphalte roofs, with embrasures and parapets. There will also be internal alterations. The architect is Mr. George Duns, of Duns, and the contractors for the work in the centre part of the building are:—Mason, Henry Steel, Greenlaw; joiner, James Crombie, Duns; slater and plasterer, William Fortune, Chirnside; plumber, Abel Ford, Coldstream.

PRIMITIVE METHODIST CHURCH, BROOKWOOD, SURREY.—Memorial stones of a new Primitive Methodist church and hall were laid at Brookwood recently. The building will be of brick, with Bath stone facings, and will be in the Gothic style. It will be 46 ft. long by 30 ft. wide, and, with the schoolroom will provide seating accommodation for 450 persons. Included in the building are an entrance vestibule, gallery, minister's and deacons' vestries, schoolroom, and some half-dozen class-rooms, with a tower 50 ft. high. The total cost of erection is estimated at 1,700*l.* Messrs. Atken & Greene, of Plaistow, are the builders, and the architect is Mr. Clark Hallam, Stepney Green.

SANITARY CHAMBERS, GLASGOW.—New sanitary chambers have been erected at Glasgow, at the junction of Cochrane-street and Montrose-street. Practically the whole of the ground floor is devoted to the Sanitary Inspector and his staff, &c. The only exceptions are the south-west corner, which is devoted to the vaccination department, and comprises rooms for the officer and waiting and operating rooms; and the north-east corner, where there is a room in which suspected patients may be isolated until examined. On the first floor the Medical Officer of Health, and the junior officer have their rooms, and accommodation is also provided for the veterinary surgeon and the other medical assistants. The rest of the story, and also the greater part of the second floor, is occupied by the inspecting sanitary officers. Those for each district of the city have a room set apart for their use. A caretaker's house is also provided, and the large square tower which surmounts the building is used as a chemical laboratory. The principal novelty in connexion with the chambers is the proposed bacteriological department. Also on the second floor is an exhibition-room, where it is proposed to show and test all forms of sanitary appliances which may be submitted to the Sanitary Inspector for his opinion. The site for the chambers cost 11,000*l.*, and the buildings about 19,000*l.*

EMPIRE THEATRE OF VARIETIES, OLDHAM.—This building is in course of erection on the site formerly occupied by Retiro House, at the corner of Yorkhire-street and of Waterloo-street. There are two entrances to the pit of the new structure, each 10 ft. wide, and two each 6 ft. wide to the circle, all from Waterloo-street. In addition to these, there are two exits to the pit, each 7 ft. 6 in. wide, one into Woolacott-street and one into Retiro-street. All steps and passages to exits are of fire-proof construction. There are three private boxes on either side of the proscenium opening. The box staircases also lead to the orchestra stalls, and from these staircases, and at the stage level, a means of access to the stage is provided for the use of the orchestra. The proscenium opening is to be provided with a fire-proof asbestos curtain, and all openings between the stage and any other part of the house will be covered by iron doors. The circle is carried on steel stanchions, girders, and cantilevers. There will be seating accommodation in the pit stalls for close upon 2,000, and in the circle and boxes for about 600. At the back of the pit and under the footpath in Waterloo-street is a refreshment bar about 40 ft. long, and at either end of this there are lavatories, &c. Both the pit floor and the circle are made with a fall towards the stage. All round the back of the circle is a promenade about 7 ft. 6 in. wide, and behind this again, divided from the auditorium by an arcade, are refreshment bars, cloak-rooms, lavatories, &c., for both ladies and gentlemen. The refreshment bars are raised four steps above the promenade floor, so that a view of the stage can be obtained through the arcade. A store-room is provided beneath each bar. The board-room will be placed in the central tower, and access thereto will be obtained by means of a staircase leading from the larger bar in the circle. The electric light will be adopted throughout, and, in addition, a large sun-burner will be provided. The front elevation is of rough brick covered with cement, relieved with moulded cornices, strings, and architraves. There will be a glazed verandah along the whole of the front, with ornamental pediment in the centre glazed with leaded lights. This verandah will be supported on wrought-iron cantilevers. The stage is at the Retiro-street end. On either side will be the artistes' dressing-rooms, each room being supplied with lavatory, with hot and cold water. There will be two staircases on either side for access to these rooms. The manager's office is situated over the boxes on the prompt side, and will be connected by means of telephones with every part of the house. The building will be heated by hot water. The work is being carried out from the designs and under the superintendence of Mr. Sidney Stott, architect, Oldham.

DEAF AND BLIND SCHOOL, PENKHULL, STAFFORDSHIRE.—A school for the deaf and blind was recently opened at Penkhull. The institution is built within the grounds of Josiah Spode, the potter. The mansion on the site, built in 1803, has now been converted into the administrative department of the new blind and deaf school. New buildings have been added to the rear of it, or eastwards, for the deaf children, and to the right or southwards, for the blind. From the circular entrance the main vestibule is reached, with the visitors' room on the left. The staircase hall is lighted from the dome, and from this extend corridors left and right, that to the left giving access to the kitchens, stores, teachers' sitting and dining rooms, &c., with the laundry and technical instruction room running at right angles. The corridor to the right gives access to the master's dining-room and office and to the rooms devoted to the blind, consisting of day-rooms, class-rooms, music-rooms, and teachers' sitting-room. In front is a corridor, with master's drawing-room and general bath-room on the right, and the large dining-hall on the left. At the head of this corridor is the central hall, with class-rooms on either side for the deaf children, and extending right and left are also corridors, terminated by the day-rooms for the deaf children, the left hand being for boys and the right for girls. From the boys' day-room on the left access is gained to the technical instruction rooms. From the corridors fireproof stairs reach up to the various dormitories and masters' and servants' bed-rooms. Over the laundry and technical instruction rooms are the sick wards, consisting of two rooms, with nurses' room between, with bath-room and conveniences cut off by cross ventilation from the rest of the institute. The cellaring of the old house has been utilised, a portion being capable of being fixed as a workroom for the blind, and the hot-water heater for the supply of hot-water to baths, housemaids' sinks, &c., being placed in another portion, the rest being used as stores. A dispensary, lavatory, and conveniences, both upstairs and down, are provided. The floors of all corridors are fireproof except those in the master's part upstairs. The walls of all corridors (except to master's part), class-rooms, day-rooms, and staircases have tiled dados, and the whole building is heated by steam. Inlet ventilation is provided by means of Tobin brackets, and the foul air is extracted by tubes running from the ceilings into high towers (in which are placed water storage tanks) or by flues run up with the chimneys. The central hall is fitted with gymnastic appliances. There is accommodation for 139 children, and the necessary teaching and servant staff. The principal contractors for the several works were as follows:—Buildings, part of fittings, gasworks, and water mains, Mr. J. R. Yoxall, of Stoke; heating, Messrs. Dawson & Co., of Stalybridge; hot water and painting to old portion, Messrs. J. Bickley & Co., of Hanley; engine and boiler, Messrs. Thomas

Shore & Son, Hanley; sanitary appliances, Twyfords, Limited, Hanley; tile dados, Messrs. Minton, Hollins, & Co., Stoke. The whole of the work has been carried out under the superintendence of Messrs. R. Scrivener & Sons, architects, Hanley. The total cost has been about 20,000*l.*

SANITARY AND ENGINEERING NEWS.

SEWAGE SCHEME, WHITWORTH, LANCASHIRE.—The new sewage purification works of the Whitworth Urban District Council, which have been constructed at Tonacliffe, Whitworth, by Messrs. Hinnitt and Murphy, C.E., of Manchester, were opened on the 12th inst. The outfall sewers and the main sewers laid through the district are of a total length of 8¼ miles, and there are several miles of branch sewers now being laid which will, when executed, provide the district with a complete system of sewerage. The system of treatment of sewage adopted at these works is one of chemical purification in settling tanks combined with subsequent filtration through artificial filter beds. The works, as designed, provide for extension, if required.

RAILWAY, BUDLEIGH SALTERTON.—The new Budleigh Salterton Railway was opened on the 14th inst. The line joins the Sidmouth branch, which is connected with the London and South-Western Railway at Tipton St. John. Thence to Salterton the single rails run through the valley of the Otter to the sea. There are at present only two stations, one called Budleigh, which provides for East Budleigh and Otterton, and the other called Salterton, which is the terminus. There are, however, sidings for goods traffic at Newton Poppleford and Colaton Raleigh, and at the former place a station will in all probability shortly be built. The length of the line is 6 miles 41 chains, and it has been constructed, under the direction of the engineer, Mr. W. Clarke, C.E., by Messrs. Lucas & Aird.

SEWERAGE SCHEME, BARMBY MOOR DISTRICT, POCKLINGTON.—The Pocklington Rural District Council have instructed Mr. D. Balfour, M.Inst.C.E., of Newcastle, the engineer for the Urban Scheme of Main Sewerage and Sewage Disposal for the town of Pocklington, to prepare plans and report on a scheme for the drainage of Barmby Moor District, to be connected to the above by arrangement with the Urban Council.

SEWAGE SCHEME, WOKINGHAM. — Mr. F. H. Tulloch, Local Government Board Inspector, attended at the Town Hall, Wokingham, recently, and held an inquiry into the subject matter of an application to the Local Government Board by the Town Council of Wokingham, for special permission to borrow 5,000*l.* for works of sewerage and surface water drainage. Those present included Mr. J. May (Town Clerk), Mr. J. Manley (Borough Surveyor), and Mr. A. G. Bates (Gas Works Manager).

SEWAGE WORKS, BRADFORD.—Mr. Rienzi Walton, C.E., Inspector to the Local Government Board, held an inquiry in the Council Chamber, at the Bradford Town Hall, recently, into the application by the Bradford Corporation for sanction to borrow 50,000*l.* for works of sewerage and drainage. The Town Clerk (Mr. Geo. McGuire) appeared on behalf of the Corporation in support of the application, and he was attended by M. J. H. Cox, Borough Surveyor, and others. The Town Clerk said the works for which the application had been made might be described as miscellaneous. The proposed sewers would comprise new ones required for the drainage of districts in the borough, new sewers to replace old sewers which were no longer suitable, and special relief sewers for the carrying off of storm water. From time to time 282,000*l.* had been expended in the construction of sewers alone, in accordance with the main sewerage scheme of Bradford, and these works were distinct from sewage disposal works. That total amount had all been expended, and 50,000*l.* was required to go on with the scheme.

SEWAGE DISPOSAL WORKS, ALNWICK.—The new sewage disposal works at Alnwick have just been opened. The scheme just completed was decided on after an inspection of the sewage disposal works at twenty-three different places by Mr. Geoffrey Wilson, Town Surveyor, and various deputations with him. It consisted, in the first place, of making provision for the diversion of storm and surface waters from the main sewers in the town into existing storm water culverts; and the diversion of the regular flow of sewage into the new high level intercepting sewer, and its purification by precipitation in settling tanks and filtration of the clarified water through osier beds, the filtered water from the under drainage being discharged into the river by a new outfall below the Bog Mill, three-quarters of a mile below the old outfall, and more than half a mile above Hawkhill Bridge. The plans and specifications were prepared by Mr. Wilson; Mr. James Moir has acted as inspector of works under him, and Mr. R. Hudson, of Sunderland, has been the contractor.

LOCAL SEWERS IN LONDON.—The Main Drainage Committee of the London County Council have sanctioned the construction of the following local sewers:—Poplar: 450 ft. and 1,250 ft. of 12-in. pipe and concrete sewers in Dewberry-street and St. Leonard's-road respectively. St. Marylebone: 980 ft. of 4 ft. by 2 ft. 8 in. brick and concrete sewer and 950 ft. of 12-in. pipe sewer from Broadley-terrace along the east, south, and west sides of Blandford-square by Hayes-place and Harewood-place to Marylebone-road on the site of the proposed station and hotel buildings of the Manchester, Sheffield, and Lincolnshire Railway.

FOREIGN.

FRANCE.—A special committee has been appointed to organise, for the 1900 Exhibition, the retrospective exhibitions of Fine Art and Decorative Art. It includes among its numbers MM. Roger Ballu, Baudot, Bouvard, Ralph Brown, Corroyer, Dutert, Ch. Garnier, and other well-known architects and artists. M. Ch. Yriarte, the eminent art critic, is also a member of the committee.——The students of the Ecole des Beaux Arts are making a formal complaint as to the construction and planning of the "loges," originally intended for sixty students, and now often containing from 250 to 300; a wooden structure, too, on the third story of the building, with only one small exit door and staircase.——The Société Centrale des Architectes has awarded commemorative medals to three artisans, M. Piquet, M. Melles, and M. Couvreur, for their courage in rescuing a number of persons from the late fire at the risk of their own lives.——M. Huet, the Inspecteur-général who succeeded Alphand as Inspecteur-général of "Ponts et Chaussées," is retired, and there is some difficulty about finding an adequate successor to him. An engineer will probably be chosen, though most of the work is more within the province of an architect.——At the Salon, M. Harpignies has obtained the "medaille d'honneur" for painting. M. Harpignies was born in 1819, at Valenciennes, and studied under Achard, first exhibiting at the Salon of 1853; since when he has exhibited every year. The medal for sculpture has been awarded to M. Mathurin-Moreau, whose remarkable work "Les Exilés" was published in the *Builder* some years ago. He was born at Dijon in 1822, and was a pupil of his father first, and then of Ramey and Dumont. The medal of honour in architecture has not been awarded, though M. Pontrémoli came near obtaining it.——The Société Centrale des Architectes has lost one of its original members, M. Charles Clément le Cœur, who has just died at the age of 92, at Pau, where he had founded a local Art Society and organised a museum of which he acted as curator. He wrote a learned work on the archæological curiosities of Bearn.

GERMANY.—There was an interesting ceremony at Munich in connexion with the inauguration of the New Central Law Courts. The architect of the building is Professor Frederic Chiersch, who received a distinction on the occasion of the opening, from the hands of the Prince Regent. —— Two new garrison churches have been completed at Berlin, and their inauguration took place with considerable ceremonial. One of the garrison churches is for the Catholic community, and the other for the Lutherans. Both buildings are of considerable importance, and we shall take an early opportunity of referring to them again.——At Cologne there has been completed an imposing bank building, for a branch of the German Reichbank; the Gothic style has been adopted. Mr. Hasak is the architect.——We notice from the advertisement columns of our German contemporaries that a competition is being arranged at Munich for a model design for villa residences, and premiums of the value of 300*l.* are offered. The assessors include Professor Frederic Chiersch.—— We regret to record the death at Munich of a very popular architect, Herr Mathias Berger.——We notice from our official contemporary of Berlin, that there will be a first vote of 2,500*l.* for preliminary expenses in connexion with the representation of Germany at the Paris International Exhibition. The total of the vote, which will be spread over three years, is to be 250,000*l.*——There is to be a new casino at Wiesbaden, and a competition has been opened for sketch designs. The programme of the competition has been framed under the auspices of the Municipality; Messrs. Ende, of Berlin, Wallot, of Dresden, and Thiersch, of Munich, having been called in as advisers. These gentlemen will also act as assessors. The premiums are for 300*l.*, 200*l.*, 100*l.*, and 50*l.* in value.——The Statistical Office at Berlin has just issued some particulars regarding the number of theatres in Prussia, their accommodation, &c. It appears that the largest theatre in Prussia is the Frankfort Opera House, which has 1,900 seats, whilst the New Private Theatre at Berlin has 1,800 seats. There are apparently thirty theatres which have accommodation for under 1,000, and about twenty-five that can hold an audience of 1,000 to 1,500. ——From an article in the *Deutsche Bauzeitung*, it appears that the reconstruction of the bridges over the River Spree has practically been completed, and that the last one is shortly to be taken in hand. This will be the Alsen bridge, which will cost 25,000*l.* At present the principal bridge in course of construction is the one on the line of the Potsdammer-street.——To those interested in modern horticultural buildings we would call attention to an article in the *Centralblatt der Bauverwaltung* of May 22, with illustrations of the new conservatories in the Botanical Gardens, which are being laid out by the Government.

THE CAPE.—Owing to the building depression on the Rand large numbers of artisans are coming down South. Most of the men are shipping directly home, though a certain number remain in Cape Town, where the building trade is just now brisk, and the demand for labour in excess of the supply. The City Club at Cape Town is about to be rebuilt at a cost of £15,000, the architect being Mr. Herbert Baker, by whom the work was won in open competition. Under the same architect the rebuilding of Mr. Rhodes's house is far advanced, the contract sum being about 40,000*l.* A large new hotel has been commenced at Cape Town in the upper part of the City, under the auspices of the Castle Mail Company, the architects being Messrs. Dunn & Watson, of London. The design has been most carefully prepared, and will be a welcome addition to the architecture of the city. The same architects' design for the Castle Company's own office in Adderley-street has just been completed, and both in appearance and quality of building is far ahead of any in the Colony hitherto erected by private enterprise.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS. —Messrs. Whitelegg & Whittaker, architects, Manchester, have removed from their former address to Somerset Buildings, 19 Brazenose-street, Manchester.——Mr. Arthur Blomfield Jackson, who was in partnership with the late Mr. C. J. Phipps, and has been associated with him in his more recent works, will carry on the practice at the same address (26, Mecklenburg-square).

TRADE NEWS.—The directors of Stuarts Granolithic Stone Company, Limited, Regent Dock, London, Birmingham, and Edinburgh, recommend a dividend of 10 per cent. for the year ending 1896.

THE JUBILEE CELEBRATIONS.—In the House of Commons, on Tuesday, the Home Secretary, replying to Mr. Hogan, said he had no definite information respecting the intention to crowd the roofs and front rooms of numerous old buildings along the route of the Jubilee procession. There was no law to prevent persons inviting as many guests as they liked to their own houses, but the County Council, with whom he had been in constant communication, had considerable powers with regard to dangerous structures, and he had very good reason to know that they were quite alive to their responsibility in this matter.

CHURCH STRUCK BY LIGHTNING.—St. Clement's, Church, Leigh, Essex, was struck by lightning on Tuesday afternoon. The turret and belfry were entirely wrecked, and the church was filled with smoke, while the clock was demolished. A large quantity of débris blocked the steeple stairs. Three large stained-glass windows were broken. The damage is estimated at 1,000*l.*

THE CONSISTORY COURT.—At a sitting of the Court, in St. Paul's, on the 19th inst., Dr. Tristram, Q.C., Diocesan Chancellor, granted faculties for the erection by the Corporation, and by several City Companies, of seats in St. Paul's-churchyard, for the Queen's procession on June 22. He granted similar faculties in respect of St. Mary-le-Strand, St. Dunstan-in-the-West, and St. Clement Danes churchyards. It was stated that a well-known contractor would pay 5,750*l.* for the privilege at St. Clement Danes, and that the money would be devoted to the repair and adornment of the church.

EXTENSION OF THE ELECTRIC LIGHTING WORKS, &C., HANLEY.—Colonel J. T. Marsh, one of the inspectors of the Local Government Board, recently held an inquiry at the Town Hall into three applications made by the Hanley Town Council. The first was to borrow 15,000*l.* for the extension of the electricity works, the second to borrow 5,000*l.* for the completion of the park, and the third was to borrow 800*l.* for providing underground conveniences at the top of Broad-street. There were present, amongst others, Messrs. A. Challinor (Town Clerk), J. Lobley (Borough Surveyor), Sutherland and Cowell (Electrical Engineers), Burton (Assistant Surveyor), and Mawson (Park Designer). The Town Clerk, in making the application, stated that in February, 1893, the Local Government Board sanctioned the borrowing of 21,000*l.* for providing plant, machinery, and appurtenances for supplying electric lighting under the Order of 1891, and since then other loans had been sanctioned, bringing the total expended up to date to 46,110*l.* If the present application was granted the total capital would be 61,110*l.* The demand for the light was continually increasing, and he could call consumers to testify to their appreciation of the illuminant.

THE STRAND IMPROVEMENT SCHEME, &C.—The Select Committee of the House of Commons, of which Mr. Rankin is Chairman, resumed consideration of the omnibus Bill of the London County Council, under which it was proposed to widen the Strand by removing the block of houses between the churches of St. Mary-le-Strand and St. Clement Danes. Mr. Littler, Q.C., and Mr. Freeman, Q.C., having addressed the Committee, the room was cleared. On the readmission of the public, the Chairman said: The Committee consider that the preamble of the Bill, as far as relates to the Strand improvement scheme, has been proved. With regard to the principle of betterment, they are of opinion that it is not in itself unjust, but in the present scheme they consider it can only be justly

and usefully applied to those properties which have a frontage upon the north side of Holywell-street. They also consider that the new street, being of great width, will require refuges in the middle in various places, and they also wish to call attention to the alteration, without stating what it should be, which will be necessary in sub-Clause 1 of Clause 41, which is the definition of the area over which betterment should be placed.—The Committee then proceeded to consider the remaining portion of the Bill which related to the widening of Tottenham Court-road, at the Oxford-street end, by the removal of the island of houses lying between the east side of Tottenham Court-road and Boziers-court. By this proposal the western side of Boziers-court will become the western side of the widened thoroughfare. Mr. Talbot, representing the County Council, said that, having regard to the decision just given, the Council would only seek to impose the improvement charge upon the property which, after the removal of the block, would front upon the widened portion of the road, the property between the southern corner of Tottenham Court-road and Hanway-street. The Council's advisers felt that the case of the eastern side of Tottenham Court-road was so analogous to the case of the south side of the Strand that they could not ask the Committee to include it in the betterment area. The Chairman announced that they found the preamble of this part of the Bill also proved.

ARCHITECTS AND BUILDERS. — On the 18th inst., Mr. Fred. E. Weatherly delivered an address on "Contracts" to the members of the Bristol Master Builders' Association, in the Board-room of the Chamber of Commerce. Mr. A. Krauss, President of the Association, was in the chair. Mr. Weatherly said he must at the outset express his indebtedness to Mr. Hudson's book on building contracts. He referred to the peculiarities distinguishing building contracts from ordinary contracts, pointing out that they were full of complexity, of risk, and multiplicity of detail. It was not fair to construe building contracts in the same bald, hard and fast way that other contracts were construed. He called attention to the architect's position as master of the situation, being the valuer, who decided all disputes, and whose decision was final. Moreover, he was the judge of his own work. He was the agent of only one party to the contract, and his decisions could not be impeached except on a charge of fraud, which was, rightly, a terribly difficult charge to support. The arbitration clause was therefore of vital importance. No one would dispute that architects were men of the greatest skill and integrity, and in Bristol and the West of England things seemed to work smoothly between architects and builders. It was not against the best and capable men that they had to guard themselves, but against the young and inexperienced. The very powers given to architects by the common forms of building contracts were precisely what might cause friction and even ruin to builders and disaster to employers in cases where the architect was young and inexperienced, and where ignorance and perhaps temper or wounded vanity might promote friction. He enlarged on the fact that an architect did not guarantee that his drawings were correct, his plans feasible, or his calculations accurate; and the builder had no remedy if he undertook to carry out a contract according to a plan which was afterwards proved to be incorrect. He ventured to think too great power was placed in the hands of the architect. Builders had to fight in order that the drawings and plans should be guaranteed by the architect or his employer; and if they were not correct it should not be the builder who should suffer. He referred in some detail to the form of contract, specially dealing with the relation of the architect and builder, and calling attention to important matters which were excepted in the reference to arbitration. He understood there had been endeavours on the part of builders to frame an arbitration clause which should be reasonable and fair to both parties. Unfortunately, however reasonable builders might think that clause was, he understood that the Institute of Architects refused to accept it. It seemed to him, however, that the contract form they desired showed them to be very longsuffering, as they might reasonably ask for more than they did. He also dealt with several points of interest to builders in connexion with contracts. What all persons desired was some form of contract which should enable all parties to work with the greatest harmony and with the greatest spirit of independence, without one party having undue power over the other. A hearty vote of thanks was given to Mr. Weatherly for his address. —*Bristol Times.*

OLD ROMAN ROAD AT STROOD.—For some time past traces of the old Roman road have been discovered in Rochester and Strood. The road was first exposed at the foot of Star Hill, and it has been seen at intervals all along the street. Portions of it were turned up a week or two since, at the foot of Rochester Bridge, near by the Castle Club, while during the excavating operations now going on in connexion with the storm water drainage works at High-street, Strood, the workmen have been constantly throwing out portions of the paving all along from the foot of Rochester Bridge. Near to the railway bridge, in the centre of the High-street, they came across the Roman road, about 3 ft. from the surface. It is in a most perfect state. Wheel ruts are discernible, and it is thought that on the road being opened further in the direction of Station-road, the other wheel rut will be discovered and the width of the Roman waggon thereby established beyond all doubt. An interesting point of the discovery is that it shows the construction of the road throughout, and illustrates what the place was like before the Romans made the road. The land was undoubtedly marsh, and before the paving was laid, oak piles were driven so as to form a foundation, and then by a very careful method of preparation the road was laid sufficiently high so as to bring it up to the level of the old Roman bridge across the river. Mr. George Payne, F.S.A., has inspected the spot, and taken measurements. He has also numbered certain of the stones with a view to the same being preserved for exhibition in the Rochester Museum.—*Chatham News.*

DINNER, BRIGHTON MASTER BUILDERS. — The annual dinner of the Brighton Association of Master Builders was held on the 20th inst., at the Clarence Rooms, Hôtel Métropole, Brighton. Alderman Botting, J.P., Chairman of the Association, presided. After dinner the loyal toast was honoured at the invitation of the Chairman. Mr. J. K. Nye proposed "The Mayor and Corporation," and Alderman Davey responded. Mr. G. S. Godfree proposed "The Association of Master Builders." He said he understood the Association was formed not so much for the protection of the master builders as for the protection of the workmen of the town. The Chairman, in responding, said it was quite true that the Association was not formed for the purpose of fighting the workmen of the town. One and all were prepared to say that on no occasion had they had a serious difference with their own men, but they had frequently been interfered with from outside. The men, wisely or unwisely, had joined unions which called upon them at certain times to strike, and he thought the masters had been inclined more to pity them than to blame them. There was much that was good in the unions, but the abuse was that at certain times when they could make good money the men were called out and bound to remain idle. Their men in Brighton were called out under such circumstances four years ago, and that Association was then formed—as much to protect their workmen as themselves; and from that time to the present there was the best of feeling between the masters and the workmen. The difficulties were raised always by certain men who got their living out of the workmen, and who went over the country disturbing the peace between masters and workmen wherever they could. There was only one name to call it, and that was a bad form of Socialism. There was a good form of Socialism where there was a desire to elevate men generally, and lift them to a better position. He thought it possible they might have a repetition of strikes in the country, because the union leaders watched for prosperity, and regarded the time when workshops were full of work as the proper one for a strike. The master builders must, therefore, be prepared, for it was where they were not ready that strikes were declared, and if they kept together as they had done during the past four years he did not think there would be any trouble in Brighton. Referring to the new Employers Liability Bill, he said he hoped the Association in London, of which theirs was a branch, would be very firm and determined in resisting the extension of the Bill to the building trade. Up to the present moment the Bill was restricted to what were called dangerous trades; but there was no doubt that in Committee a very strong attempt would be made to make the building trade also responsible for all accidents. Where there was carelessness on the part of the master builder he was certain he ought to pay, for every precaution should be taken for the safety of the men, and he was certain that in Brighton generally that was done, but an attempt would doubtless be made to saddle the employer with all responsibility, however much the workman was to blame for carelessness. — Councillor Wilson proposed "The Visitors," for whom Mr. Howard Gates responded. —Mr. Parsons proposed "The Chairman," Alderman Botting responding. — Councillor Holloway proposed "The Vice-Chairmen." — Mr. Lynn, in responding, said he knew a case in which an apprentice got heavy damages against his employer. The law costs broke the employer, and the apprentice, after a brief holiday, returned, and set up in his place.—Mr. Garrett and Mr. Parsons also responded.

ORGAN, ST. SAVIOUR'S COLLEGIATE CHURCH, BOROUGH.—The Bishop of Southwark dedicated, on the 19th inst., a new organ at St. Saviour's Collegiate Church, Borough. The organ has been built by Messrs. Lewis & Co., Brixton. The case was designed by Sir Arthur Blomfield, A.R.A.

ARCHÆOLOGICAL DISCOVERY, IPSWICH.—A discovery of exceptional archæological interest has been made in Fore-street, Ipswich. Men have been engaged pulling down some old premises occupied by Messrs. Martin & Newby, and when they came to the wall at the back they discovered two rough piers, about 4 ft. thick, constructed of flint and York stone put together with Roman cement. It was with the greatest difficulty that they could break away any portion, but the space round was cleared, and Mr. Watling, the archæologist, had no hesitation in declaring that the piers were once part of the East Gate of the town. The width of the gate, according to the space between these remains, was about 17 ft., but the height must be speculative, as the piers do not stand more than 6 ft. high. The brick wall was apparently built on the old town wall, which was connected with the piers, and which, it is evident, runs each side under the existing wall. This was built about 1700, and the bricks are in a splendid state of preservation. They are perfectly smooth, and very much the same shape as those in use at the present day, though, if anything, a trifle shorter than those of more recent date taken from the top of the wall.—*East Anglian Times.*

CAPITAL AND LABOUR.

CARPENTERS' DISPUTE, LONDON.—A large number of the carpenters employed by Messrs. Waller & Co., of Belgrave-square, and Messrs. Allen & Co., in the erection of Jubilee grand stands at Charing Cross struck work on Wednesday in consequence of the refusal of the employers to concede them an advance of 2d. per hour on their present rate of wages. Upwards of 120 workmen were employed on the two undertakings, and in all cases they were in the receipt of wages equivalent to 10d. an hour, which is the recognised trade union rate for London carpenters. A large section of the workmen, however, appear to have grown suddenly dissatisfied with these terms, and justified their attitude by a reference to other cases in London where workmen are being paid a higher rate of wages for this class of "emergency" work. The works foreman for the contractors refused to accede to their request, and consequently the dissatisfied workmen, numbering over fifty, left work. The works foreman states on behalf of the contractors that no notice had been given them of the demand, which they considered altogether unreasonable.

THE STRIKE IN THE PLYMOUTH BUILDING TRADE. —The representatives of the Plymouth Master Builders' Association are canvassing through the three Western counties for carpenters and plasterers. Several more men whom they have induced to agree to the terms of the agreement with which each delegate is armed have arrived in the town, and, it is stated have been put to work.

IPSWICH BUILDING TRADE STRIKE.— Neither parties to the dispute in the Ipswich building trade have made any advances towards a settlement of the carpenters' and joiners' strike. The men are gradually going away to other places, some thirty or more having left, and to members of the Society strike pay of 15s. per week has been distributed. Somewhat to their surprise, it is stated, non-Society members who have come out were also paid—the married men at the rate of 11s. per week, and single men 8s.

THE CARLISLE JOINERS' STRIKE.—The strike amongst the joiners still continues and the prospects of a settlement seem as remote as ever. No overtures have been made by either side, and the ranks of the strikers are being thinned daily by departures to other towns. Of the 142 men who came out seventy-two have now left and commenced work elsewhere, and seventy remain in the city. Of the numbers who have left it is stated that only two are receiving less than 9d. an hour.—*Carlisle Journal.*

THE CARPENTERS' STRIKE AT DUDLEY.—A meeting of the carpenters and joiners of Dudley and district, amongst whom a strike is now existing, was held in the Windmill Inn, Old Mill-street, Dudley, a few days ago. Mr. H. Crump said that that was the seventh week of the strike, which had been declared for the purpose of securing an advance from 7d. to 8d. per hour, and the adoption of a code of working rules. Mr. J. Matthews (Birmingham), who presided, expressed surprise that the Dudley employers should have so long resisted the very moderate demands of the men. The wages at Birmingham were 9d. per hour, and in Wolverhampton they were 8½d., but Dudley had long been notorious for under payment in the various trades.—Mr. George Wilson proposed "That we, the carpenters of Dudley and district, are still determined to remain firm to our demands of 8d. per hour and code of working rules, and pledge ourselves to use every legitimate means to bring the same to a successful issue."—Mr. B. Round seconded the motion, which was supported by Mr. Vaughan (Wolverhampton), Mr. G. Davis (Birmingham), and Mr. Davies (Wolverhampton), the delegates giving the men on strike assurance of continued help from the surrounding districts, and pointing out that even in Wednesbury and Darlaston the carpenters had had an advance. The resolution was carried unanimously.—Mr. H. Crump proposed "That we, the members of the building trade of Dudley, protest against the action of the Sanitary Committee of the Dudley Town Council, in allowing the fair wages clause to be violated by the employment of underpaid labour on contracts, and urge upon all members to use every means to secure representatives who will see that the objects of the fair contracts resolution are carried into effect." Mr. Joseph Round seconded the resolution, which was carried.

STRIKE OF BUILDERS' LABOURERS, OMAGH.—The labourers engaged in the erection of the new asylum, the new infirmary, and the new Roman Catholic Church in Omagh have struck for an advance of

wages. The men at present have a wage of 12s. per week, and are demanding a rise of a halfpenny an hour.—*Freeman's Journal.*

MEETINGS.

FRIDAY, MAY 28.

Royal Institution.—Professor Moissan on "The Isolation of Fluorine." With experiments. 9 p.m.

SATURDAY, MAY 29.

Lewisham Antiquarian Society and St. Paul's Eccesiological Society.—Afternoon meeting at Pulborough and Hardham, Sussex.

London and Provincial Builders' Foremen's Association.—Monthly Meeting, the Memorial Hall, Farringdon-street. 7.30.

MONDAY, MAY 31.

Royal Institute of British Architects.—Special General Meeting to receive and consider the Report of the Council on the Election of Candidates for Fellowship. 8 p.m.

Surveyors' Institution.—Annual General Meeting to receive the Report of the Council and the announcement of the result of the election of officers for the ensuing year. 3 p.m.

WEDNESDAY, JUNE 2.

Royal Archæological Institute.—Viscount Dillon, and Mr. W. H. St. John Hope, M.A., on "An Inventory of Arms and Armour belonging to Thomas, Duke of Gloucester, in 1399." (2) Mr. James Hilton, F.S.A., on "The Coronation Stone at Westminster." 4 p.m.

British Archæological Association.—Paper by Mr. T. Cann Hughes, entitled "Notes on North Lancashire." 8 p.m.

Builders' Foremen and Clerks of Works Institution.—Ordinary meeting of the members. 8 p.m.

THURSDAY, JUNE 3.

Society of Antiquaries.—Ballot for the election of Fellows. 8.30 p.m.

Royal Institution.—Professor Dewar on "Liquid Air as an Agent of Research." II. 3 p.m.

Northern Architectural Association.—Annual Excursion: Bamburgh.

FRIDAY, JUNE 4.

Royal Institution.—Mr. W. H. Preece C.B., F.R.S., on "Signalling through Space without Wires." 9 p.m.

SATURDAY, JUNE 5.

Edinburgh Architectural Association. — Visit to Torphichen Church.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

8,614.—WATER-CLOSETS, TRAPS AND MOULDS: *P. J. Davies.*—The inventor claims (1) the construction and casting in one piece (except capping piece) of simple syphonic traps of lead, with or without diaphragm; (2) casting lead syphon in one or more pieces to be cast with the Swift, Cottage, Household, Isis, &c., so as to convert these ordinary pans into syphonic closets; (3) constructing lead round pipe syphons to convert closet basins or hoppers into syphonic closets. Beside the foregoing, there are sundry claims for details or modifications.

10,940.—HINGES AND SIMILAR MECHANISM: *H. Hyde.*—The inventor claims a hinge for controlling the action of all-down doors, provided with an adjustable spring, which, when the door is opened and closed, is compressed or extended, as the case may be, by the action of an eccentric surface, cam, or their equivalent, formed upon or affixed to, or in connexion with the butt of hinge, and thereby setting up friction resistance to the action of the hinge. Other combinations of a hinge with an adjustable spring are described and claimed.

11,612.—ATTACHMENT FOR USE IN MOULDING, &c.: *J. Belli.*—The attachment is designed to cut a mould and a fret, if required, at one operation. Attachment consists of a piece of steel, one end of which is screwed on revolving cutter stock, the reverse end being of conical shape, and terminating in a parallel spindle of small diameter, the point being shaped like a wood-boring bit. A slot is formed through central part of attachment. In this slot the moulding cutter is placed, and secured by a set screw. In action the design is pasted on the wood, and the stock carrying attachment is set in motion. The piece of wood is now forced down upon the bit-shaped end of the attachment, and, by a species of routing action, the pattern is cut out. Duplicates from the work thus cut can readily be obtained, and frets cut in the ordinary way by the saw can be moulded by this invention.

13,846.—METALLIC LATTICE: *B. E. W. Sifken.*—In order to form a cheap and portable lattice for fencing and other purposes. Inventor connects two series of metal strips so that they expand into the usual diamond-shaped lattice form; but at each crossing point of the strips he forms aperture in strips for rivet of a somewhat elongated form, and adopts between the strips a distance piece or washer, connecting the three thicknesses at such crossing by a rivet. This expedient allows of a certain amount of "play" or self-adjustment, and subserves several purposes.

21,144.—STONE-SAWING MACHINES: *J. Peckover.*—Inventor aims in his mechanism at—supporting the stone being operated upon and carrying it along in a smooth, steady manner, securing a uniform pressure, spacing, setting, and holding saws rigidly in position, collecting abraded materials, and redistributing it to saws, uniformly maintaining slabs in their true position, regulating water supply, and securing general economy and efficiency. For these purposes, inventor adopts in a stone-sawing machine the combination with a frame having three trackways of front and middle saws arranged to travel on the lower and narrower of the said ways, and a rear car mounted to travel on the higher and wider trackway, and adapted to pass the said middle car. An endless carrier provided with plates or buckets conveys the abraded material from the kerfs and discharges it at points above the stone.

24,528.—CHIMNEY COWLS: *W. E. Cox.*—Inventor constructs his cowl, either of metal or earthenware, with an outside straight pipe and an inside straight pipe of smaller diameter, having a fixed or moveable double cone on top of the small pipe inside. Cone may be a fixture or may rise and fall on a sliding rod.

NEW APPLICATIONS FOR LETTERS PATENT.

MAY 10.—11,542, D. Williams and E. Davies, Gas, Smoke, and Foul Air Extractor.—11,548, J. Thompson, Dust Excluder and Ventilator for Sliding Windows.—11,577, G. Westgarth, Window Fastener.

MAY 11.—11,653, J. Lawrence, Gully Trap Applicable to all Traps.—11,673, J. Cole, Window Sash Fasteners.—11,687, G. Healey, Sash Fasteners.—11,689, R. Roberts, Sash Fasteners.—11,715, W. Henley and others, Apparatus for Use in Erecting Buildings and other Structures of Concrete.

MAY 12.—11,771, H. Groome and J. Wynes, Self-Counter-sinking Screw.—11,833, J. Wood, Window Sash Fasteners.—11,841, G. Scholefield, Bolts or Fastenings.

MAY 13.—11,895, J. Hart, Window Sash Fittings.—11,903, H. Alexander, Machine for Pressing Bricks.—11,916, G. Ashford, Fasteners for Window Sashes, Fanlights, Casements, &c.—11,925, E. Smith, Stoneware or Earthenware pipes.—11,925, H. Coward, Construction of Fireproof Floors.—11,933, P. Jensen, Fire Grates.—11,943, T. Farley, Sash Fasteners.—11,954, T. Palmer, Brick-making and Pressing Machinery.

MAY 14.—11,975, E. Pim, Ornamenting Wood.—11,990, E. Schacht, Door Checks or Holders.—12,006, A. Constable, Stop Gates for Sewage and Irrigation Purposes and for Flushing Manholes in Sewers.

MAY 15.—12,035, R. Veevers, Window Frames.—12,070, C. Lancaster, Wood Screws, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED.

5,738, A. Clifford, Flushing Tank or Waste Water Preventer.—9,136, J. Evans, Scaffold Cramps, &c.—9,447, J. & S. Blake, Compositions or Paints for Preserving Structures.—10,099, C. Fischer, Catches or Fasteners for Sash and Folding Windows, &c.—10,147, T. Holford, Window Sash Fasteners.—10,340, E. Ashwell, Sash Fasteners.—10,556, J. Coleman, Windows.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

10,629, F. Lynde, Lavatory Basins, &c.—11,384, G. Taylor, Chimney Pots.—12,229, M. Logan, Stall Flooring.—13,570, W. Griffiths, Means for holding ajar Doors, Window Casements, &c —4,779, W. Wise, Enabling Bolts and the Shanks of various Articles to be easily secured in Walls, &c.—5,858, C. Müller, Door-lifting Appliances.—9,065, J. Clark, Traps for Sinks, Gullies, &c.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

May 6.—By DOUGLAS YOUNG & Co. (at Sutton).

Sutton, Surrey.—Lenham-rd., forty plots of building land, f. £3,397
Benhill-st., twenty-seven plots of building land, f. 3,500
Lichfield-rd., nine plots of building land, f. 728
Warwick-rd., eleven plots of building land, f. .. 831

By WORSFOLD & HAYWARD (at Chippenham).

Lacock, Wilts.—"The Lacock Brewery," f., with twenty-one public and beer houses attached .. 26,600

By HENRY HENDRIKS (at Birmingham).

Bordesley Green, Warwick.—17, 18 and 19, Victoria-st., f. 725
14, 15 and 16, Victoria-st., u.t. 72½ yrs., g.r. 8*l.* 10s. 445
Handsworth, Staffs.—1 to 11 (odd), Putney-rd., u.t. 75 yrs., g.r. 11*l.* 1,350
Edgbaston, Warwick.—Willow-av., &c., twelve building plots, f. 758

By D. SMITH, SON, & OAKLEY (at Plymouth).

Halbeton, &c., Devon.—"Luson Farm," 125 a. 0 r. 32 p., f. 4,318
"Brownstone Farm," 176 a. 1 r. 7 p., f. 4,460
Enclosures of land, 14 a. 0 r. 33 p., f. 400
Four cottages, blacksmith's shop, and 1 a. 1 r. 5 p., f. 585

May 7.—By W. W. READ & Co.

Holborn.—High Holborn, one-tenth share of f.g.r. 250*l.*, reversion in 74 yrs. 675

By GIDDY & GIDDY.

Hounslow, Middlesex. — Bath-rd., "Clipstone House," and 5 a., f. 3,900

By A. J. SHEFFIELD.

Upton Pk.—Neville-rd., a freehold building plot.. 340
St. George's East.—1, 3, 5, 7, and 9, Anthony-st., u.t. 14 yrs., g.r. 10*l.* 11s. 8d. 705
Bethnal Green.—29, 31, 33, and 35, Digby-st., and 16, 18, 20, and 22, Digby Walk, u.t. 29½ yrs., g.r. 40*l.* 260

By TOPLIS & HARDING.

High Beech.—Lippett's Hill, a plot of land, 3 a. 2 r. 21 p., f. 500
Buckhurst Hill.—Queen's-rd., f.g.r. 12*l.*, reversion in 80 yrs. 380
Old-rd., "The Bald Faced Stag" p.-h., and 2 a. f., r. 100*l.* 8,000
Palmerston-rd., a plot of building land, f. 910
Palmerston-rd., "Fairview," and half an acre, f., r. 135*l.* 2,600
Blackheath.—36, Humber-rd., f., e.r. 35*l.* 420

By WYATT & SON (at Southampton).

Southampton.—Jail-st., &c., a freehold building site, area 5,400 yds. 4,500
113 and 115, Priory-rd., f. 220
85 and 87, Duke's-rd., with a plot of land, f. 350
7 to 15 (odd), Kent-road, with a plot of land, part f., and part u.t. 965 yrs., g.r. 7*l.* 16s. 530
35, Kent-rd., f. 275
4, Maddison-street, u.t. 964 yrs., g.r. 5*l.* 5s. 120
Shirley.—Winchester-rd., "Prospect Cottage," f. ., r. 16*l.* 425

May 8.—By MADDISON, MILES, & Co. (at Norwich).

Acle, Norfolk.—"Monies Farm," 234 a. 1 r. 10 p., f. 6,200

By BRUTON, KNOWLES, & Co. (at Gloucester).

Ashleworth, Glos.—A freehold cottage with land, 3 a. 1 r. 33 p. 150

May 10.—By P. HODSON.

Hornsey.—42, Malvern-rd., u.t. 80 yrs., g.r. 6*l.*, e.r. 32*l.* 260
Willesden.—58, 60, and 62, Mayo-rd., u.t. 98 yrs., g.r. 16*l.* 10s. 305
64 and 66, Mayo-rd., u.t. 88 yrs., g.r. 11*l.* 350
Islington.—58 and 60, St. Peter's-st., f., r. 80*l.* 1,015

By MAPLE & Co.

Hampstead-rd.—9 and 11, Oakley-sq., u.t. 46 yrs., g.r. 28*l.*, r. 130*l.* 1,115

By HUNTER & HUNTER.

Windsor, Berks.—High-st., "The Castle Hotel," area nearly half an acre, f., r. 400*l.* 10,080
Kensington.—12a, Bedford-gardens, f. 600
Paddington.—24 and 26, Beethoven-st., u.t. 79½ yrs., g.r. 14*l.*, r. 80*l.* £625
Harlesden.—1 and 25, Bruce-rd., u.t. 81½ yrs., g.r. 14*l.*, r. 60*l.* 470
Queen's-rd., a freehold building plot 100

By G. MARSDEN (at Wirksworth).

Wirksworth, Derby.—"Barn Close" and "Hopton Swamp," 4 a. 1 r. 4 p., f. 341
"Bailey Croft House," area 1,103 yds., f. 505

May 11.—By PERCY H. CLARKE.

Chelsea.—51, Leader-st., u.t. 11½ yrs., g.r. 4*l.* 130
Fulham.—9, Musgrave-cres., u.t. 69½ yrs., g.r. 2*l.* 5s. 6d., r. 32*l.* 400
18 and 24, Moore Park-rd., u.t. 47½ yrs., g.r. 12. 10s., r. 81*l.* 4s. 615
123, Moore Park-rd., u.t. 69½ yrs., g.r. 5*l.* 5s., r. 35*l.* 325

By J. BOTT.

Herne Hill. — 187, Norwood-rd., u.t. 74 yrs., g.r. 6*l.*, r. 40*l.* 340

By E. H. HENRY.

Clapham Common.—South side, two blocks of building land, f. 3,610
22, Cedars-rd., u.t. 62 yrs., g.r. 20*l.*, e.r. 90*l.* 560

By RUTLEY, SON, & VINE.

Clapham. — 27, Lambourn-rd., u.t. 47½ yrs., g.r. 6*l.* 6s., r. 38*l.* 300
Camden Town.—135, Arlington-rd., u.t. 40 yrs., g.r. 10*l.* 305
11, James-st., u.t. 15 yrs., g.r. 5*l.* 5s., r. 32*l.* 140

By E. & H. LUMLEY.

Loch Fyne, Argyllshire. — "The Ballimore Estate," about 8,000 a. 50,000

By DEBENHAM, TEWSON & Co.

City of London.—22, Water-lane, f. 1,740
Holloway.—Brecknock-rd., i.g.r. 24*l.*, u.t. 52 yrs., g.r. 2*l.* 460
Brecknock-rd., &c., i.g.r. 66*l.* 10s., u.t. 52 yrs., g.r. 2*l.* 10s. 1,380
Kentish Town.—Prince of Wales-rd., i.g.r. 14*l.* 14s., u.t. 51 yrs., g.r. 1*l.* 1s. 260
Canonbury. — St. Paul's-pl., i..gr. 76*l.* 12s., u.t. 29 yrs., g.r. 10*l.* 880
Belgravia.—Eaton-sq., i.g.r. 60*l.*, u.t. 27 yrs., g.r. 3*l.* 820
Euston-rd. and Euston-sq.—I.g.r. 147*l.*, u.t. 10 yrs., g.r. 48*l.* 600
Euston-rd.—Burton-cres., i.g.r. 36*l.* 10s., u.t. 9 yrs., g.r. nil 180
Bryanston-sq.—Upper George-st., i.g.r. 39*l.* 18s., u.t. 7 yrs., g.r. nil 210
Hyde Pk.—Montagu-sq., i.g.r. 68*l.* 5s., u.t. 5 yrs., g.r. nil 230
Bayswater.—10, Alexander-st., u.t. 52 yrs., g.r. 9*l.*, r. 55*l.* 450

By ROBSON & PERRIN.

Notting Hill.—83, Chesterton-rd., u.t. 74 yrs., g.r. 8*l.* 330
Gray's Inn-rd.—24, Gough-st., u.t. 13½ yrs., g.r. 5*l.* 115

By JONES, SON, & DAY (at Masons' Hall Tavern).

Leytonstone.—High-rd., "The Elms," p.-h., u.t. 40½ yrs., g.r. 100*l.*, with goodwill 27,650

By FLEURET, SONS, & ADAMS (at Masons' Hall Tavern).

Broxbourne, Herts.—"The Crown Hotel" and 16 a., f., with goodwill 11,500
City of London.—Giltspur-st., "Gadd's Coffee House," with beer licence, f. 2,610

By HEPPER & SONS (at Leeds).

Leeds, Yorks.—105, North-st., area 160 yds., f. 1,600

By NICHOLSON, GREAVES, & Co. (at Sheffield).

Upper Hallam, &c., Yorks.—"Stanedge Lodge," and the Stanedge and Hallam Moors, &c., 2,112 a. 1 r. 17 p., f. 40,000
Farm lands, moor lands, &c., 648 a. 2 r. 10 p., f. 11,000
White Path Moss Moor and farm lands, 909 a. 3 r. 39 p., f. 9,000
The "Grouse and Trout" p.-h., and 2 a. 1 r. 25 p., f. 3,000
Sheffield, Yorks.—Loxley, "Grange Bank," f. 680
150 to 160 (even), Devonshire-st., and 14 and 16, Broomhall-st., f., r. 32*l.* 6,950

By FENN & Co. (at Ipswich).

Holton St. Mary, &c., Suffolk.—"Holton Place Farm," 236 a. 0 r. 4 p., f. and c. 2,350
"Fuller's Farm," and an enclosure, 16a. 2r. 16p., f. 630
Great Wenham, &c., Suffolk.—"Cashier or Acacia Farm," 42 a. 2 r. 17 p., c. 500
Holton St. Mary, Suffolk.—Two freehold cottages 335
East Bergholt, Suffolk.—Four cottages and three enclosures, 10 a. 0 r. 2 p., f. 150

By H. DUKE & SON (at Dorchester).

Dorchester.—Maumbury Way, 41 plots of building land, f. 732
Herringstone-rd., four plots of building land, f. 540

May 12.—By COOPER & GOULDING.

Stoke Newington.—24 and 26, Ayrsome-rd., u.t. 82½ yrs., g.r. 10*l.* 10s. 420

By FURBER, PRICE, & FURBER.

Chalk Farm.—34, Regent's Pk -rd., f., e.r. 70*l.* 810
Hackney.—11 and 13, Brunswick-st., f. 780

By G. E. CLARKE.

Loughton.—Queen's Pk.-rd., "Bell Cot," with house and shop, and plot of land adjoining, f., r. 51*l.* 785
Walthamstow.—12 and 34 to 46 (even), Fraser-rd., f., r. 226*l.* 2,625
Leyton.—29 and 31, Copeland-rd., f., r. 52*l.* 4s. .. 600

By J. J. DEVERELL.

Holloway.—15, Anson-rd., u.t. 68¾ yrs., g.r. 6*l.* 6s., e.r. 60*l.* 535

By INMAN & Co.

Hendon.—Burroughs-lane, "The Laurels," "Oak House," "Ivy House," and "The Ferns," also plot of land, f., r. 109*l.* 1,850

By D. YOUNG & Co.

Peckham.—7 and 9, Montpelier-rd., u.t. 45 yrs., g.r. 8*l.* 16s., r. 56*l.* 460
Clapham.—12, Jeffrey's-rd., f., e.r. 50*l.* 535
Dulwich.—99, Woodvale, u.t. 79 yrs., g.r. 10*l.* 10s., e.r. 50*l.* 400
Snaresbrook.—New Wanstead-rd., "The British Queen" p.-h., f., r. 50*l.*, with goodwill 2,500
1 to 6, East-row, f. 430
1 to 4, Front-row, f., r. 67*l.* 540
1 to 5, Voluntary-pl., f. 560
Voluntary-pl., a plot of building land, f. 195
Ilford.—Barking-side, "Beehive Cottage," f. 200

CONTRACTS AND PUBLIC APPOINTMENTS.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Cleaning and Decorating	G.W.R. Mechanics' Inst.	The Sec. New Swindon	June 1
*Road Materials	Lewisham Bd. of Wks.	Offices, Catford, S.E.	do.
*Kerbing, Tarpaving, &c. Lindsl-road	do.	do.	do.
do. do. Prince's-rd.	do.	do.	do.
do. do. Blackheath Rise	do.	do.	do.
*Granite Kerb and Granite Channelling	Bromley U.D.C.	The Surveyor, Council Offices	do.
*Wood Paving	do.	do.	do.
*Repairs to Tarpaving	Tottenham U.D.C.	P. E. Murphy, 712, High-road, Tottenham	do.
Ten Cottages and Five Farmsteads, Chat Moss Estate, Irlam	Manchester Corp.	R. D. Callison, Town Hall, Manchester	June 2
Lodge, Boathouse, &c. Victoria-park	Handsworth U.D.C.	E. Kenworthy, Surv. Council House, Handsworth	do.
Additions to Workhouse	Lanchester Union	J. W. Rounthwaite, Archt. 13, Mosley-st. Newcastle-upon-Tyne	do.
House, High Sreen, Durham		J. R. Stewart, High Spen	do.
Waterworks, Hopeman, Elgin, N.B.		Alex. Hogg, 24, Academy-street, Elgin	do.
Waterworks, Cartford, &c.	Fylde (Lancs) Waterworks Co.	E. Garlick, Engr. 33, Winckley-street, Preston	do.
Additions to Schools, Aberdare	Merthyr Union	T. Roderick, Archt. Clifton-street, Aberdare	June 3
Club Rooms, Penmaenmawr, North Wales	Co-op. Soc.	R. Davies, Archt. Bangor	do.
Two Bridges, Porth, Glam.	Ystradyfodwg U.D.C.	W. J. Jones, Surv. Pentre	do.
Hospital, Laundry, &c.	Barry (Glam.) U.D.C.	J. C. Pardoe, C.E. Council Offices	do.
Ten Cottages, Blaina, Mon.	Blaina Indus. Soc.	Secretary, High-street, Blaina	do.
Schools, Spring-street	Hucknall Torkard Sch Board	R. Rowe, Board's Offices	do.
Chancel, &c. Parish Church, Magheragall, Ireland		G. L. W. Blount, Archt. Lisburn-road, Belfast	do.
Schools, Parade, Cardiff		G. Thomas, Archt. Queen's-chambers, Cardiff	do.
Schools, Cwmfelin, Llanelly		W. Jenkins, Cwmcarnhowell, Llanelly	do.
Chapel, Horwich, Lancs.		W. H. Dinsley, Archt. Chorley	do.
Two Houses, Millrigg-street, Frostoms, Workington		W. G. Scott & Co, Archt. Victoria-bldgs, Workington	June 4
Bridge and Approaches, Melyn Ciwc, Glam.	Cowbridge, &c. R.D.C.	E. Jenkins, Surv. Nolton-street, Bridgend	do.
Additions to Bathing Station, Sea Beach	Aberdeen T.C.	J. Rust, Archt. 224, Union-street	do.
Buildings, &c. Bryn-street	Ashton-in-Makerfield U.D.C.	J. W. Liverseedge, Surv. Council Offices	do.
Council Offices, Hengoed	Gelligaer R.D.C.	P. V. Jones, Archt. Wood View, Hengoed	do.
*Painting at Various Station	M. R. Co.	Co.'s Archt. Cavendish House, Derby	do
Paving, Flagging, &c. Hartley-street	Dewsbury Corp.	B ro. Surv. Town Hall	June 5
Schools, &c.	Glaisdale Sch. Bd.	E. H. Smales, Archt. 5, Flowergate, Whitby	do.
School, Bridge of Orchy, N.B.	Glenorchy, &c. Sch. B.	K. Mackae, 5, Argyll-st. Oban	do.
Workhouse Buildings	Chapel-en-le-Frith Union	Garlick & Flint, Archt. 5, Terrace-road, Buxton	do.
Post Office, Faringdon, Berks	E. J. Chamberlain	W. Drew, Archt. 22, Victoria-street, Swindon	do.
Church, Farrar-street, Barnsley	Congregational Church Trustees	Hemsoll & Paterson, Archt. 18, Norfolk-row, Sheffield	do.
*Fencing, Gates, and Pillars	Christchurch Union	Clerk to the Guardians	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered
Library, Hall, &c. St. Columb's College, Derry		E. J. Toye, Archt. Strand, Derry	June 5
Church, Donemana, Strabane, Ireland		do.	do.
Welsh Square Setts, Queen's-road	Belfast Harbour Com.	G. F. L. Giles, Harbour Engineer,	June 7
Road Materials	East Grinstead U.D.C.	R. Wilds, Surv. London-road, East Grinstead	do.
*Sewer Ironwork	Southwark Vestry	Vestry Hall	do.
Cast-iron Water Mains, Patcham and Preston	Brighton Corp.	Waterworks Engineer, 12, Bond-street, Brighton	June 8
*New Works at Schools	Gloucester Technical Schools Com.	Waller & Son, 17, College Green, Gloucester	do.
*Guernsey Granite and Norway Granite Kerb	East Ham U.D.C.	Surv. Public Offices, Wakefield-street, East Ham	do.
*Sinking Well, &c.	Isle of Wight County Asylum	The Asylum, near Newport, Isle of Wight	do.
Brick Reservoir, Great Harwood	Accrington Water Bd.	A. H. Aitken, Board's Offices	June 9
*Sewerage Works	Southend-on-Sea Corp.	J. Mansergh, 5, Victoria-street, S.W.	do.
*Painting, &c. at Infirmary	Paddington Guardians	E. H. Sim, 8, Craig's-court, Charing Cross	do.
*Sewage Disposal Works	Wallingford U.D.C.	F. E. Hedges, Clerk's Office, Wallingford	June 10
Sewer, Mere-road to Dickinson	Blackpool Corp.	J Wolstenholme, Boro' Surv	do.
*Granite, &c.	Brighton Corp.	F. J. C. May, Town Hall	June 11
*Portland Cement	do.	do.	do.
*Painting	West London School	Superintendent at School, Ashford, nr. Staines	do.
*Erecting Buildings	Guildford Gas Light and Coke Co.	Corbett Woodall, Palace Chambers, Westminster	do.
*Road and Sewer Works	Hornsey U.D.C.	E. J. Lovegrove, Council Offices, Southwood-lane, Highgate, N.	June 14
*Stabling, Ambulance Shed, and Cottage	do.	do.	do.
*School Furniture	Walthamstow Sch. B	T. W. Liddiard, Cleveland, High-st. Walthamstow	June 15
*Erecting Offices	Royal Insurance Co. Liverpool	T. F. Doyle, 4, Harrington-street, Liverpool	June 17
*Kerbing, Channelling, Tar-paving, &c.	Friern Barnet U.D.C.	E. J. Reynolds, Council Chambers, Beacon-field-road, Friern Barnet	June 23
*Painting at Barracks, Colchester	War Department	R.E. Office, Colchester	No date
Additions to Infirmary, Fell-lane	Keighley Union	J. Judson & Moore, Archt. Cavendish-st. Keighley	do.
Additions to Collegiate Building, Addlestone		Sec. St. George's College, Addlestone, Surrey	do.
Two Houses, Fraser-street, Ashton-under-Lyne		T. George & Son, Archt. Old-square, Ashton	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Sanitary Inspector	Stoke-upon-Trent Corp.	80*l.* and house, &c.	June 3
*Clerk of Works	Central London Sick Asylum	4*l.* 4*s.* per week	June 4
*Inspector of Dusting and Slopping	Islington Vestry	2*l.* 12*s.* per week	June 10
*Surveyor	St. Luke's Vestry, E.C.	Commencing 300*l.* per ann.	June 19
*Superintendent of Cleansing	do.	150*l.* per ann.	do.

Those marked with an asterisk (*) are advertised in this Number. ***Contracts, pp.* lv. vi. viii. & xxi.** ***Public Appointments, pp* xviii. & xxi.**

Southwark.—120 and 122, Southwark Bridge-rd., and 1 and 2, Friar-st., u.t. 83 yrs., g.r. 38*l.*, r. 153*l.* 16*s.* £750
3, 4, 5, and 6, Friar-st., u.t. 83 yrs., g.r. 72*l.*, r. 211*l.* 4*s.* 500
Forest Hill.—56, 58, 60, and 62, Westbourne-rd., also "Eagle Cottage" adjoining, u.t. 62 yrs., g.r. 14*l.* 10*s.*, r. 223*l.* 10*s.* 1,675
30 and 32, Dalmain-rd., u.t. 65 yrs., g.r. 8*l.* 300

By ROGERS, CHAPMAN, & THOMAS.

Pimlico.—63, 59, 71, 73, and 75, Lupus-st., u.t. 34 yrs., g.r. 46*l.*, r. 412*l.* 16*s.* 4,530
51, 57, 59, 61, and 65, Lupus-st., u.t. 34 yrs., g.r. 42*l.*, r. 350*l.* 3,605
5 and 7, Warwick-place West, u.t. 28 yrs., g.r. 12*l.* 15*s.* 9*d.*, r. 83*l.* 710
124, 126 and 128, Warwick-st., u.t. 30 yrs., g.r. 24*l.*, r. 190*l.* 12*s.* 1,865
1, Cambridge-ter., u.t. 34 yrs., g.r. 8*l.*, r. 81*l.* .. 780
55, Cambridge-st., u.t. 36 yrs., g.r. 8*l.*, r. 75*l.* .. 710
14, 16, and 17, Bessborough-gardens, u.t. 29½ yrs., g.r. 27*l.*, r. 170*l.* 1,490

By A. DOWELL (at Edinburgh).

Manor, Peeblesshire.—"Glenrath and Hallmanor" Estate, area about 4,570 a. 23,600

By HEPPER & SONS (at Horsforth).

Horsforth, Yorks.—Low-lane, an enclosure of land, 8 a. 0 r. 20 p., f. 905

May 13.—By F. J. BISLEY & SONS.

Deptford.—18, Windmill-lane, u.t. 65 yrs., g.r. 4*l.* 230
4 and 5, Arthur-ter., u.t. 48½ yrs., g.r. 8*l.* 615
Camberwell.—109, New Church-rd., f. 400
Stratford.—12, 14, and 16, Cruikshank-rd., f. 905

By S. H. DAVIDS & CO.

Marylebone.—17, Balcombe-st., u.t. 12 yrs., g.r. 15*l.* 15*s.*, r. 65*l.* 255

By W. WESTON.

Paddington.—30, Alfred-rd., u.t. 52½ yrs., g.r. 5*l.* 325

By DANIEL WATNEY & SONS.

City of London.—23, Silver-st., area nearly 1,100 ft., f., r. 250*l.* 7,750
Rotherhithe.—St. Mary Church-st., "The Europa" p.-h., area 6,850 ft., f., r. 175*l.* 9,000
Bermondsey.—Jamaica-rd., "The Old Horns" b.-h., and two shops adjoining, area 2,650 ft., f., r. 123*l.* 4,000
Blackfriars.—43, Blackfriars-rd., f., r. 60*l.* 950

By C. ATKINS.

Catford.—Hawstead-rd., f.g.r. 9*l.*, reversion in 86 yrs. 252
The Retreat, f.g.r. 16*l.*, reversion in 91 yrs. 500
Forest Hill.—St. Germains-rd., f.g.r. 7*l.*, reversion in 77 yrs. 205
30, Wastdale-rd., f., r. 35*l.* 605
Catford.—The Retreat, "Retreat House," f., r. 30*l.* 670
5 and 6, Blackshaw's-alley, f. 200
1, 3, and 17, Willow-walk, f. 430
131, 133, and 135, Rushey-green, f. 1,250
2, Rushey-green, f. 560
112, 114, 116, and 118, Rushey-green, u.t. 16 yrs., g.r. 75*l.*, r. 160*l.* 810

Lee.—67 to 83 (odd), Dacre-st., u.t. 10¼ yrs., g.r 52*l.* 10*s.* £120

By C. C. & T. MOORE.

Limehouse.—124, 126, and 128, Salmon-lane, and three sets of stabling in Notgrove-st., f., r. 134*l.* 10*s.* 1,540
58, Salmon-lane, u.t. 52 yrs., g.r. 10*l.* 200
Bow.—265 and 267, Old Ford-rd., f., r. 57*l.* 6*s.* 775
Clapton.—13, London-rd., u.t. 66 yrs., g.r. 6*l.* r. 39*l.* 395
Leytonstone.—354 to 362 (even), High-rd., also the "Plough and Harrow" p.-h., u.t. 10 yrs., g.r. 60*l.* 400
437 to 459 (odd), High-rd., u.t. 42 yrs., g.r. 30*l.* 1,910
364 to 372 (even), High-rd., and 1 to 5, Back Harrow-cottages, u.t. 42 yrs., g.r. 20*l.* 1,006
606, High-rd., f., r. 32*l.* 565
Mile End.—5 and 6, Dudley-ter., u.t. 62 yrs., g.r. 9*l.* r. 60*l.* 820
Poplar.—28, 36 and 38, Tetley-st., a profit rental of 45*l.* for 17 yrs., with reversion 720

By NEWBON, EDWARDS, & SHEPHARD.

Caledonian-rd.—1, 2, 4, 5, and 6, Lyon-st., u.t. 47½ yrs., g.r. 25*l.* 1,000
Kennington.—45, Trigon-rd., u.t. 27 yrs., g.r. 4*l.* 10*s.* 275
Barnsbury.—3 and 5, Rhodes-st., u.t. 61 yrs., g.r. 10*l.* 440
4 and 5, Richmond-st., u.t. 48 yrs., g.r. 9*l.*, r. 87*l.* 820
33, 35, 37, 39, and 41, Albion-grove, u.t. 46 yrs., g.r. 35*l.*, r. 184*l.* 1,390
67, 69, 71, and 73, Albion-grove, u.t. 41 yrs., g.r. 28*l.*, r. 112*l.* 790
12, Clayton-st., u.t. 43 yrs., g.r. 13*l.* 13*s.* 125
Clayton-st., an improved rental of 15*l.* 13*s.*, for 43 yrs., with reversion for 4 yrs. 265
37, Freeling-st., u.t. 43 yrs., g.r. 13*l.* 13*s.* 125
Holloway.—10, Williamson-st., u.t. 48 yrs., g.r. 5*l.*, r. 26*l.* 300

By STIMSON & SONS.

Carshalton.—St. James's-rd., f.g.r. of 18*l.*, reversion in 91 yrs. 380
Peckham.—Sumner-rd., f.g.r. of 16*l.* 10*s.*, reversion in 65 yrs. 515
Middle-st., f.g.r. of 8*l.* 10*s.*, reversion in 56 yrs. 265
Walworth.—Arthur-st., f.g.r. of 12*l.* 12*s.*, reversion in 84 yrs. 365
Arthur-st., f.g.r. of 5*l.* 10*s.*, reversion in 64 yrs... 155
Blucher-st., f.g.r. of 11*l.*, reversion in 64 yrs..... 325
Blucher-st., f.g.r. of 11*l.*, reversion in 75 yrs..... 330
Salisbury-row, f.g.r. of 6*l.* reversion in 74 yrs. .. 165
Huntsman-st., &c., i.g.r. of 23*l.*, u.t. 13½ yrs., g.r. 7*l.* 10*s.* 100
Clapham.—Nelson-grove, &c., f.g.r. of 45*l.*, reversion in 70 yrs. 1,100
Brixton.—Industry-ter., i.g.r. of 15*l.*, u.t. 48¾ yrs., g.r. 6*l.* 150
Southwark.—Garden-row, &c., f.g.r. 140*l.*, reversion in 97 yrs. 3,490
Bath-st., f.g.r. 18*l.*, reversion in 43 yrs. 490
Earl-st., f.g.r. 6*l.*, reversion in 43½ yrs..... 170
82 to 90 (even), St. George's-rd., with a building in the rear, f., r. 260*l.* £4,430
4, Burman-st., f., r. 40*l.* 520
Lambeth.—71 to 75, Tower-st., and 68 to 71, Webber-row, u.t. 6 yrs., g.r. 50*l.*, r. 200*l.* 10*s.* 200
Rochester, Kent.—24, King-st., f., r. 10*l.* 10*s.* 140
Barnsbury.—Mountfort-ter., f.g.r. 20*l.*, reversion in 79 yrs. 540
Mile End.—Globe-rd., &c., f.g.r. 15*l.* 10*s.*, reversion in 7 yrs. 1,310
Paddington.—Somers Mews, i.g.r. 100*l.*, u.t. 39½ yrs., g.r. 12*l.*, with reversion 1,500

By J. A. & W. THARP.

Wanstead.—Cambridge Park, "The Chestnuts," and 2 a., f. 3,500
Leytonstone.—Wallwood-rd., "Brenhilda," f., r. 40*l.* 655
186, 190, 192, 194, and 196, Hainault-rd., f., r. 134*l.* 1,940

By HORNE, SON, & EVERSFIELD (on the premises).

Chobham, Surrey.—"Chobham Lodge," and half an acre, f. 620

By WOODS & SNELLING (at Sidcup).

Sidcup.—Granville-rd., "Arrandoon," "Linstead," and "Bertram House," f., r. 16*l.* 2,250
Hatherley-rd., "Sidcup Villa," and "The Wintons," f., r. 11*l.* 1,590

By WESLEY STEPHENS (at Wadebridge).

St. Issey, Cornwall.—"Trelow Farm," 562 a. 1 r. 13 p., f. 5,825

By G. MARSDEN (at Wirksworth).

Brassington, Derby.—"Harborough Rocks Farm," 162 a. 1 r. 0 p., f. 3,950

By WILBY & BALDEN (at Penistone).

Denby, Yorks.—"High Flatts Farm," 84 a. 0 r. 29 p., f. 1,550
Enclosures of land, 21 a. 3 r. 21 p., f. 607

May 14.—By JONES, LANG, & CO.

Hyde Park.—26, St. George's-pl., u.t. 42 yrs., g.r. 45*l.*, r. 450*l.* 6,710
Mayfair.—21, Berkeley-sq., u.t. 50 yrs., g.r. 250*l.*, r. 600*l.* 5,750

By H. J. BROMLEY.

Norwood.—Knight's Hill-rd., "Rothschild's Gardens," and 1¾ a., f. 3,650
3, Grecian-cottages, u.t. 15½ yrs., g.r. 6*l.* 5*s.* 200
Deptford.—17, 19, and 21, Wellington-st., f. 1,015
126, Watergate-st., f., r. 18*l.* 190
16 and 18, New King-st., f. 560

By S. CLIFFORD TEE.

Stamford Hill.—1, 4, 6, 7, 8, 11, 18, 20, 24, and 26, Linthorpe-rd., g.r. 76*l.* 4*s.*, r. 517*l.* 5,650

By J. A. TRYTHALL.

Norwood.—1 to 4, Thorn-villas, f., r. 89*l.* 14*s.* .. 825

By HAMPTON & SONS.

Clapham.—Nightingale-lane, "The Grange" and 2 a., f. 4,250
Kensington.—24 and 25, Hereford-sq., r. 278*l.* 12*s.*; also i.g.r. 18*l.*, u.t. 46½ yrs., g.r. 12*l.* 3,950
7 and 8, Hereford-sq., 46½ yrs., g.r. 24*l.*, r. 234*l.* 2*s.* 3,060

Brompton.—14, South-st., u.t. 27½ yrs., g.r. 10*l.*, r. 90*l.* £850

By HERRING, SON, & DAW.

Clapham.—Queen's-rd., "Lucan Lodge," u.t. 37¼ yrs., g.r. 20*l.*, e.r. 110*l.* 610

By THOMPSON & CO. (at Exeter).

Bridford, Devon.—"Neadon Farm," 49 a. 3 r. 28 p., f. 675

By D. SMITH, SON, & OAKLEY (at Dereham).

North Elmham.—Various enclosures of land, 46 a. 1 r. 30 p., f. 1,195

Granary, coal stores, &c., and 0 a. 1 r. 27 p., f... 535

Three freehold cottages, and 4 a. 3 r. 29 p. 380

The "King's Head" Inn and 9 a. 0 r. 18 p., f. .. 3,000

Two freehold houses and shops, with 16 a. 1 r. 34 p. 750

Two freehold houses, and 14 cottages, with 5 a. 2 r. 7 p. 1,340

Beetley, Norfolk.—An enclosure of land, 6 a. 3 r. 4 p., f. 115

East Bilney, Norfolk.—Enclosures of Land, 8 a. 0 r. 8 p., f. 110

Brisley, Norfolk.—Enclosures of land and a cottage, 23 a. 0 r. 12 p., f. 440

May 15.—By BENINGFIELD, TIDY, & CO. (at Hertford).

Little Munden, Herts.—"Libury Hall," and 298 a. 0 r. 2 p., f. 5,200

May 17.—By C. RAWLEV CROSS & CO.

Shepherd's Bush.—23 and 29, Shepherd's Bush-rd., u.t. 78½ yrs., g.r. 15*l.* 15s., r. 95*l.* 1,225

By R. W. DENYER.

Biddenden, Kent.—"Podkin Farm" and 48 a., f. 1,000

Sutton, Surrey.—Benhill-st., "Newlyn," u.t. 66½ yrs., g.r. 10*l.*, r. 55*l.* 600

Carshalton, Surrey.—Mill-lane, two freehold cottages 175

By W. T. MARSH.

Kensington.—40, Pembroke-sq. and plot of land in rear, u.t. 25 yrs., g.r. 11*l.* 10s., e.r. 100*l.* .. 900

7, Edwardes-sq., u.t. 13 yrs., g.r. 4*l.* 10s., r. 65*l.* 350

By W. HOLCOMBE & BETTS.

Kensington.—93, Holland-rd., f. 2,000

Oxford-st.—3, Tapnell-yard, u.t. 27 yrs., g.r. 7*l.*, e.r. 45*l.* 270

Bloomsbury.—51 and 51a, Huntley-st., f., r. 61*l.* 7s. 6d. 1,100

Tottenham Court-rd.—61, Whitfield-st., f., r. 55*l.* .. 980

Islington.—46, Florence-st., f., r. 42*l.* 705

Camden Town.—285, Gt. College-st., u.t. 12¾ yrs., g.r. nil, r. 40*l.* 165

61, Arlington-rd., u.t. 41½ yrs., g.r. 4*l.*, r. 42*l.* .. 410

Holloway.—86, Brecknock-rd., u.t. 52 yrs., g.r. 6*l.*, r. 48*l.* 380

Norwood.—32, Waldegrave-rd., u.t. 83½ yrs., g.r. 8*l.* 8s., e.r. 65*l.* 715

By J. & R. KEMP & CO.

Hampstead-rd.—138, 140, 142, 142a, and 144, Drummond-st., f., r. 230*l.* 4,100

Bowes Pk.—Whittington-rd., f.g.r. 8*l.*, reversion in 85 yrs. 220

Thorold-rd., f.g.r. 25*l.* 5s., reversion in 85 yrs.... 720

Wood Green.—Wenbury-villas, f.g.r. 19*l.*, reversion in 83 yrs. 490

King's Cross.—York-rd., i.g.r. 15*l.*, u.t. 45 yrs., g.r. 2*l.* 185

By FURLONG & SON (at Woolwich).

Plumstead, Kent.—Griffin Manor Way, two enclosures of land, 9 a. 2 r. 4 p., f. 1,125

By FOSTER & CRANFIELD (at Enfield).

Enfield, Chase Side.—Twenty-two plots of building land, f. 1,485

May 18.—By C. W. DAVIES.

Marylebone.—41, Gt. James-st., u.t. 23 yrs., g.r. 6*l.*, r. 50*l.* 350

Islington.—93, Cloudesley-rd., f., r. 36*l.* 495

Cloudesley-rd., f.g.r. 5*l.*, reversion in 26 yrs..... 275

Old Kent-rd.—155, Coburg-rd., u.t. 20 yrs., g.r. 1*l.* 10s. 130

By E. & A. SWAIN.

Kensington.—56, Palace Gardens, u.t. 56 yrs., g.r. 15*l.*, e.r. 125*l.* 1,260

By CHINNOCK, GALSWORTHY & CO.

Wandsworth.—6 and 7, Priory-rd., 1 to 15, Priory-pl., f., with f.g.r. 15*l.* 12s., reversion in 38 yrs.; also 1, 2, and 3, Priory-rd., u.t. 38 yrs., g.r. 24*l.* 5,510

460 to 470 (even), Wandsworth-rd., f., r. 130*l.*.. 1,750

Wandsworth-rd., "The Dun Cow" b.-h., f., r. 45*l.* 1,330

6 to 22 (even), St. Andrew-st., f., r. 163*l.* 16s.... 1,620

24, 26, 28, and 30, St. Andrew-st., f., r. 152*l.* 2s. 1,615

454 and 456, Wandsworth-rd., and a plot of land, u.t. 26 yrs., g.r. 50*l.* 380

Norwood.—209, 211, and 213, Rommany-rd., and 48, 50, and 52, St. Gothard's-rd., f., r. 135*l.* 4s. 1,150

Gamlingay, Cambs.—Hatley-rd., two enclosures, 48 a. 1 r. 15 p., f. 425

By DEBENHAM, TEWSON & CO.

City of London.—89 and 90, Milton-st., f., r. 325*l.* 6,500

44, Basinghall-st., u.t. 67 yrs., g.r, 300*l.*, r. 600*l.* 3,500

80, Chiswell-st., u.t. 75 yrs., g.r. 55*l.* r. 170*l.*..... 1,500

Chelsea.—35, Glebe-pl., u.t. 51 yrs., g.r. 17*l.* 3,000

Ramsgate, Kent.—Hereson-rd., "Hereson House" and 2 a. 1 r. 12 p., f. 2,600

Hereson-rd., eleven freehold cottages, r. 143*l.* .. 1,300

1 and 2, Flora Cottages, f., r. 23*l.* 16s. 215

By ROGERS, CHAPMAN & THOMAS.

Kensington.—63, Eardley-cres., u.t. 69¼ yrs., g.r. 8*l.*, r. 67*l.* 10s. 700

Hyde Pk.—32 and 34, Craven Hill Gardens, u.t. 67 yrs., g.r. 70*l.*, r. 350*l.* 3,170

Belgravia.—99, Belgrave-rd., u.t, 37½ yrs., g.r. 14*l.*, r. 120*l.* 1,400

Piccadilly.—3, Yarmouth Mews, u.t. 51½ yrs., g.r. 60*l.*, r. 325*l.* 3,700

Portman-square.—88, Gloucester-pl., u.t. 31 yrs., g.r. 50*l.*, r. 300*l.* 3,055

By FLEURET, SONS, & ADAMS (at Masons' Hall Tavern).

Deptford.—Butcher Row, "The Prince of Wales" p.-h., a freehold rental of 65 for 11 yrs. 2,700

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	£/s/o £/s/o
Teak, E.I.	load	22/10/0 26/10/0
Sequoia, U.S.ft.cu.		1/8 1/10
Ash, Canada	load	3/5/0 4/10/0
Birch, do.		3/15/0 5/10/0
Elm, do.		4/0/0 5/5/0
Fir, Dantsic, &c.		2/15/0 4/15/0
Oak, do.		2/10/0 3/10/0
Canada		5/5/0 6/5/0
Pine, Canada red		0/0/0 0/0/0
Do. Yellow		2/15/0 3/15/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg		5/0/0 8/10/0
Wainscot, Riga, &c., log		2'0/0 4 5/0
Odessa, crown		2'0/0 4 5/0
Deals, Finland and & 1st std	100	9/0/0 9/10/0
Do. 4th & 3rd		0/0/0 9/10/0
Do. Riga		7/10/0 8/10/0
St. Petersburg, 1st yellow		11/0/0 13/10/0
Do. 2nd yellow		10/0/0 11/0/0
Do. white		9/10/0 11/10/0
Swedish		9/10/0 16/10/0
White Sea		10/10/0 17/0/0
Canada, Pine 1st		19/10/0 25/10/0
Do. do. 2nd		14/0/0 16/10/0
Do. do. 3rd, &c.		6/10/0 10/0/0
Do. Spruce, 1st		10/10/0 12/0/0
Do. do. 3rd and 2nd		8'0/0 9/5/0
New Brunswick		7/15/0 8 5/0
Battens, all kinds		5'0/0 20/0/0
Flooring boards, sq., 1 in. prep. 1st		0 8/6 0/15/6
Do. 2nd		0/7/0 0/10/0
Other qualities—		0/5/3 0/6/9
Cedar, Cuba, ft.		/4½ /5
Honduras, &c.		/4 /5
Mahogany, Cuba		/5 /6½
St. Domingo, cargo av.		/4½ 2/3
Mexican, do. do.		/4 /5
Tobasco, do. do.		/4½ /7
Honduras, do.		/5 /6½
Box, Turkey, ton		4/0/0 15/0/0
Rose, Rio		7/0/0 14/0/0
Bahia		8/0/0 12/0/0
Satin, St. Doming.		0/0/7 0'2/0

TIMBER *(continued)*.		
Satin, Porto Rico		0/0/7 0/2/6
Walnut, Italian		0/0/2 0/0/7
METALS.		
Iron—Pig, in Scotland	ton	2/4/7 0/0/0
Bar, Welsh, in London		5/15/0 5/17/6
Do. do. at works in Wales		5/10/0 5/12/6
Do. Staffordshire, in London		5/15/0 6/10/0
COPPER—British cake and ingot		52/10/0 53/0/0
Best selected		52/15/0 53/5/0
Sheets, strong		58/0/0 58 10/0
Chili bars		48/12'6 0/0/0
YELLOW MTL	lb.	4½d. 5d.
LEAD—Pig, Spanish	ton	11/17,6 11/18,9
English com. brands		12 0/0 12 2'6
Sheet, English 6 lbs. per sq. ft. and upwards		13/3'9 0/0/0
Pipe		13/13 9 0/0/0
ZINC—English sheet	ton	20/10/0 0/0/0
Vieille Montagne		21/10/0 0/0/0
Spelter		17/0/0 17/2/6
TIN—Straits		61/5/0 0/0/0
Australian		62/10/3 63/0/0
English Ingots		64/15/0 65/5/0
Banca		62/0/0 0/0/0
Billiton		59/15/0 60/0/0
OILS.		
Linseed	ton	14'7/6 0/0/0
Cocoanut, Cochin		27/15/0 0/0/0
Do. Ceylon		24/0/0 0/0/0
Palm, Lagos		24/10/0 0/0/0
Rapeseed, English pale		27/10/0 27/15/0
Do. Brown		27/0/0 27/10/0
Cottonseed ref.		15/17/6 16/10/0
Oleine		18/10/0 19/10/0
Lubricating U.S.		0/6/3 0/7/6
Do. black		0/4/9 0/6/6
TAR—Stockholm barrel		22/0 0/0/0
Archangel		0/12/6 0/0/0
Turpentine		20/12,6 22/15/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender: and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ABERAMAN.—Accepted for the erection of thirty houses, Waun-y-Glan-Ddwr. Mr. G. A. Treharne, engineer, 27, Canon-street, Aberdare:—
W. E. Willis, Hillside-terrace, Ystrad, Rhondda £150

BALLYMAHON (Ireland).—For the erection of doctor's residence and dispensary, Newtown, for the Union Guardians. Mr. J. C. Thompson Granard, architect. Quantities by the architect:—
Thos. Fee ..... £1,250 | C. Maye, Ballymahon* £1,2.0
* Accepted.

BLYTH (Northumberland).—For the construction of a road, &c., near Cowpen-square, for the Urban District Council. Mr. Robert Grieves, surveyor, Seaforth-street, Waterloo, Blyth:—
Jacob Robson ..... £674 13 4 | G. E. Simpson, Newcastle (accepted) .. £601 14 3
Jos. Wardlaw 617 19 11

BRIDGEND (Glam.).—For additions, &c., to Town Hall, for the Committee. Mr. George F. Lambert, architect, Bridgend:—
David Llewellyn ..... £730 0 | William Francis, Bridgend* £599 0
Thomas Roberts 652 5
Charles Jenkins & Sons 619 0
* Accepted.

BROMLEY (Kent).—For the execution of drainage works, Mason's Hill, for the Urban District Council. Quantities by the Surveyor:—
Pedrette & Co. ..... £654 6 0 | G. Bell £349 12 3
Wm. Wadey ..... 429 18 0 | R Stockwell, Bromley, Kent* 345 0 6
Thos. Lansbury 428 8 6
E. Peill & Sons 403 5 6
* Accepted.
[Surveyor's estimate, £362.]

CHEDDAR (Somerset).—For building a shirt factory at Tween Town, Cheddar, for Mr. Joseph Edwards. Mr. David Cox, architect, The Barrows, Cheddar. Quantities by Mr. William Veals, Bristol:—
H. A. Forse ..... £675 0 0 | Ford & Scourse, Cheddar (accepted) £469 11 6
Love & Walte 580 0 0

CHILLINGTON (S. Devon).—For the erection of a cottage at Chillington, for Mr. R. Luscombe. Mr. H. Vickesy, architect, Torcross, Kingsbridge, S. Devon:—
P. M. Rundle ..... £325 | A. Brooking £220
J. M. Lidstone ..... 273 | Shepherd & Hutchings* .. 205
R. Moore ..... 221 | * Accepted.

CLEETHORPES (Lincs.).—For the execution of road works Poplar-road (Contract No. 9), for the Urban District Council. Mr. E. Rushton, Surveyor, Poplar-road, Cleethorpes. Quantities by the Surveyor:—
A. Brunton & Son .. £1,545 6 11 | L. N. Davison, Grimsby* £865 8 1
Hewins & Goodhand 899 12 6
* Accepted.
[Surveyor's estimate, £855 0 2.]

COWBRIDGE (Glam.).—For the restoration of Parish Church, Llantrithyd, for the Rev. E. L. Ellis. Mr. G. E. Halliday, architect, 14, High-street, Cardiff. Quantities by Mr. John W. Rodger-surveyor, 14, High-street, Cardiff:—
Williams & Thomas .. £962 4 9 | L. Merrett £750 0 0
Wm. Cox ..... 810 0 0 | W. James & Son, Cowbridge* 705 0 0
C. H. Cooksley 809 0 0
Henry Smith ..... 800 0 0 | Chas. Parsons 625 0 0
Rees & Thomas ..... 1 750 0 0 | * Accepted.

EAST HAM.—Accepted for iron church in Coleridge-avenue, for the Rev. A. G. Prichard:—
W. Harbrow, Iron Building Works, South Bermondsey, £285

ELGIN.—For the erection of a house on the farm of the Raich, Longmorn, for Mr. William Ramsay, of Longmorn. Mr. C. C. Doig, architect, Elgin:—
Building.—Alexander Mackerron £277 0 0
Carpentry.—Mackie & MacKenzie 228 10 0
Slating.—James Wilson 48 16 0
Plastering.—James Brodie 59 0 0
Plumbing.—William Lyon & Son 49 0 0
Painting.—J. Kintrea & Son 17 7 6
[All of Elgin.]

ELGIN.—For the erection of business premises, South-street, for Mr. Charles Forsyth. Mr. C. C. Doig, architect, Elgin:—
Building.—David Forsyth £907 0
Carpentry.—A. & R. Dunbar 715 0
Slating.—James Wilson 35 10
Plastering.—James Brodie 183 19
Plumbing.—J. Gordon & Son 114 0
Painting.—Alexander Forsyth 54 0
Ironwork not yet accepted.
[All of Elgin].

EXETER.—For the erection of Emmanuel's Church, St. Thomas's. Mr. Harold Brakspear, architect, Corsham, Wilts:—
Gibson ..... £10,867 | Stephens & Son £8 883
Herbert ..... 10,042 | N. Pratt 8,295
C. Breaby 9,000

GAINFORD (Durham).—For the execution of Gainford sewerage work. Mr. Robert Robinson, Engineer, Darlington:—
Contract No. 1.—General work in laying sewers, building tanks, and laying out irrigation area.
Wm. Dodds ..... £1,922 4 1½ | R. McDonald £1,514 3 2
J. Kyle & Sons .... 1,782 0 0 | Adamson 1,389 7 0
T. Lee ..... 1,757 7 6½ | P. O. Hetherington, Egglestone* 1,334 10 0
J. Clarkson 1,626 10 10
R. Wilson 1,570 6 7
* Accepted.

Contract No. 2.—Sanitary Pipes.
J. Kyle & Sons ..... £950 0 0 | J. Crossley £218 9 0
J. Dixon ..... 245 5 5 | R. Wilson 212 9 4
R. McDonald ..... 232 9 4 | J. Clarkson 211 16 9
P. O. Hetherington .. 227 10 0 | W. C. Clark (Straker & Love), Darlington* 2:9 7 3
Adamson 223 11 6
* Accepted.

Contract, No. 3.—Ironwork.
Blakeborough & Sons £221 8 6 | Adamson £199 17 3
R. McDonald ..... 220 0 0 | J. Lees & Sons 195 17 4
Wm. Smith ..... 216 9 4 | J. Clarkson 184 15 1½
Clay, Henriques, & Co. ..... 215 10 6 | R. Wilson, Queen-street, Barnard Castle (accepted) 173 3 6
Teesdale Bros. 205 14 6
J. Kyle & Sons 200 0 0
[Engineer's estimate for the whole work, £1,793. 5s. 1d.

GRAYS (Essex).—For the erection of school buildings, Bridge-road, for the Grays Thurrock School Board. Mr. C. M. Shiner architect, 2, Walbrook, E.C.:—
T. Bruty ..... £9,463 13 | F. G. Minter £7,922 0
G. Sharpe ..... 9,320 0 | H. J. Carter, Grays, Essex 7,322 0
J. Brown 8 185 10
H. R. Rons 8,120 19

GREAT YARMOUTH.—For additions, &c., to school buildings Stradbroke-road, Gorleston, for the School Board. Messrs. Bottle & Olley, architects, Queen-street, Great Yarmouth:—
R. Eastoe ..... £1,169 12 | G. W. Beech £988 0
T. Howes ..... 1,070 10 | F. Grimble 988 0
Carter & Wright ..... 1,054 12 | A. E. Bond, Great Yarmouth (accepted) 970 0
J. Ward 1,014 15
J. Balls 995 0

Plumbing.
M. A. & G. F. Reed .. £91 10 0 | W. J. Rushman £79 16 0
G. Harrod ..... 90 0 0 | Platt & Son 74 0 0
J. E. Dyson ..... 84 4 6 | R. A. Eastoe, Great Yarmouth* 67 12 0
J. Atherton 83 0 0
* Accepted.

HAPPISBURGH (Norfolk).—Accepted for iron bungalow, for Dr. Lt.-Colonel Bott:—
W. Harbrow, Iron Building Works, S. Bermondsey, £215 15

HOPTON (Great Yarmouth).—For erecting a pair of cottages for Mr. C. S. Orde, Hopton House. Messrs. Bottle & Olley, architects, 5, Queen-street, Great Yarmouth:—
G. W. Beech ..... £558 10 0 | S. Norman* £479 17
J. Ward 555 0 0
* Accepted.

KENDAL.—Accepted for golf pavilion:—
W. Harbrow, South Bermondsey £296

KETTERING.—For the execution of drainage works, &c., for the Urban District Council. Mr. T. Reader Smith, C.E., Market Hill, Kettering:—
Fred Barlow ..... £10,894 | Bentley, Son, & Partington £9,666
Bentley & Lock 10,707
Geo. Bell ..... 9,887 | Siddons & Freeman, Oundle (accepted) 8,990
H. H. Barry 9,795

KETTERING.—For the execution of works of sewage disposal extension, for the Urban District Council. Mr. T. R. Smith, C.E. Market Hill, Kettering:—
George Bell ..... £12,123 | Siddons & Freeman, Oundle* £10,700
Fred. Barlow 11,487
H. H. Barry 10,800
* Accepted.

LABRADOR.—Accepted for iron church for the Moravian Mission, for export:—
W. Harbrow, Iron Buildings Works, South Bermondsey, S.E., £450

LLANDAFF.—For the erection of a villa residence, for Mr. C. M. Morgan. Messrs. Morgan & Hodge, architects, Prudential Building, Newport, Mon. Quantities by the architects:—
George Griffiths ..... £1,836 0 | Powell & Mansfield .. £1,365 0
William Cox ..... 1,710 0 | Edwin Williams, Whitchurch* 1,356 16
J. Haines & Sons 1,581 0
Cadwalladar & Heckridge 1,400 0
* Accepted.

LONDON.—For the erection of conveniences, Hilly Fields, Brockley, for the London County Council:—
H. J. Stephens ..... £752 6 6 | Thomas & Edge £677 0 0

LONDON.—For the erection of gymnasium shelter at Maryon Park, Charlton, S.E., for the London County Council:—
Proctor ..... £253 0 | Thomas & Edge £234
H. J. Stephens 235 17

LONDON.—Accepted for erecting a stand at the Yorkshire Society's Schools, Westminster Bridge-road, for viewing the Royal procession:—
W. Harbrow, Iron Building Works, South Bermondsey, £179

LONDON.—Accepted for shedding, for Mr. H. G. Flent, King's Cross:—
W. Harbrow, Iron Building Works, South Bermondsey, £151 10

LONDON.—Accepted for alterations at "The King's Arms" public-house, Mile End, E. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, London, E.C.:—
Thomas Osborn & Sons £1,750

LONDON.—For laying-down pipe-sewers, Upper Richmond-road, S.W., for Mr. H. Shepherd-Cross, M.P. Mr. F. H. Harvey, surveyor, 183, Lavender Hill, S.W.:—

Geo. Wilson & Co.	£399	C. W. Killingback & Co...	£233
W. Seoaker	295	H. Benham & Co.	224
H. Woodham	283	J. Jackson	199

PAIGNTON.—For erecting a villa residence, Dartmouth-road, for Messrs. Bridgman & Bridgman. Messrs Norman G. Bridgman and Walter H. Bridgman, architects, of Torquay, Paignton, and Teignmouth. Quantities by Mr. Vincent Cattermole Brown:—

E. Westlake	£660	G. Webber & Maunder	£600
R. Harris	620	H. Webber & Sons	589

PONTYPRIDD.—For the erection of a church, Carnetown, Abercynon, for the Rev. D. Lloyd Davies. Mr. G. E. Halliday, architect and Diocesan surveyor, 14, High-street, Cardiff. Quantities by Mr. John W. Rodger, 14, High-street, Cardiff:—

Ed. Jones	£4,041 16 5	Wm. Games, Aberdare Junction*	£3,470 12 0
Williams & Thomas	3,780 18 6	Ed. Mainwaring	3,470 1 6
C. Jenkins & Son	3,750 4 2	W. J. Bloxham	3,348 0 0
James Williams	3,748 4 2	Williams Bros.	3,172 11 11½
Henry Smith	3,663 10 0		

* Accepted.

RAWTENSTALL (Lancs.).—For the erection of a fire station and stables, King-street (Contract No. 2), for the Corporation. Mr. A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtenstall:—

Daniel Diggle	£6,350 0	Moore Bros., Rawtenstall*	£3,528 10
Ormerod Ashworth	4,106 10	Henry Trickett†	3,440 0

* Accepted subject to certain deductions to be made by Corporation. † Withdrawn.

SALISBURY.—For the erection of three pairs of semi-detached villa residences, Wyndham-road, for Mr. J. Folliott. Messrs. John Harding & Son, architects, Salisbury:—

E. Witt	£3,495	Wort & Way	£3,400
H. J. Kite	3,483	G. Harris	3,393
E. Hale	3,450	E. Day	3,120
Webb & Co.	3,450	Vincent & Folland*	2,940

* Accepted.
[All of Salisbury.]

SNARESBROOK (Essex).—For decoration to house at Snaresbrook, N.E., for Mr. A. N. Colson. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, London, E.C.:—

T. Osborn & Sons	£245	F. J. Evans*	£197
W. Mundy	199		

* Accepted.

SOUTHALL (Middlesex).—For levelling, paving, &c., White-street, for the Southall-Norwood Urban District Council. Mr. H. R. Felkin, engineer, District Council Offices, Southall:—

W. Brown	£247	H. Lee, Southall*	£210
A. & B. Hanson	227		

* Accepted.

SOUTHEND-ON-SEA.—For the erection of a brick wall for the Corporation, Mr. H. Harlock, Borough Surveyor, Clarence-road, Southend-on-Sea:—

W. Lindgood	£111 10
F. Dupont, Southend-on-Sea*	105 10
Jones & Fields	99 0

* Accepted.

SOUTH SHIELDS.—Accepted for the erection of new wards and making extensions to the Ingham Infirmary, Westoe, South Shields. Quantities by Mr. J. Savage, Newcastle. Mr. Henry Grieves, architect, Albany Chambers, South Shields:—
Goodwin & Son, South Shields £5,928

THRAPSTON (Northants).—For the execution of water supply works at the market, for the Thrapston Market Company. Mr. J. M. Siddons, Surveyor, Oundle:—

Freeman & Son	£192	C. Pettit, Thrapston*	£185

* Accepted.

WARRINGTON.—For paving, forming, &c., Miller-street and other streets and passages, for the Corporation. Mr. Thos. Longdin, Borough Surveyor, Town Hall, Warrington:—

T. Stringer	£790 2 10	W. Heaton	£108 10 0

WEST HAM.—For pumping and electric lighting stations, Abbey Wharf, Stratford, E., for the Corporation. Mr. Lewis Angell, Engineer, Town Hall, Stratford:—

Munday & Sons	£39 825	Chessum & Sons	£35,953
Kirk & Randall	38,745	J. Jackson	35,790
B. Cooke & Co.	37,000	W. Gregar & Son, Stratford (accepted)	35,430
Shillitoe & Son	36,750		

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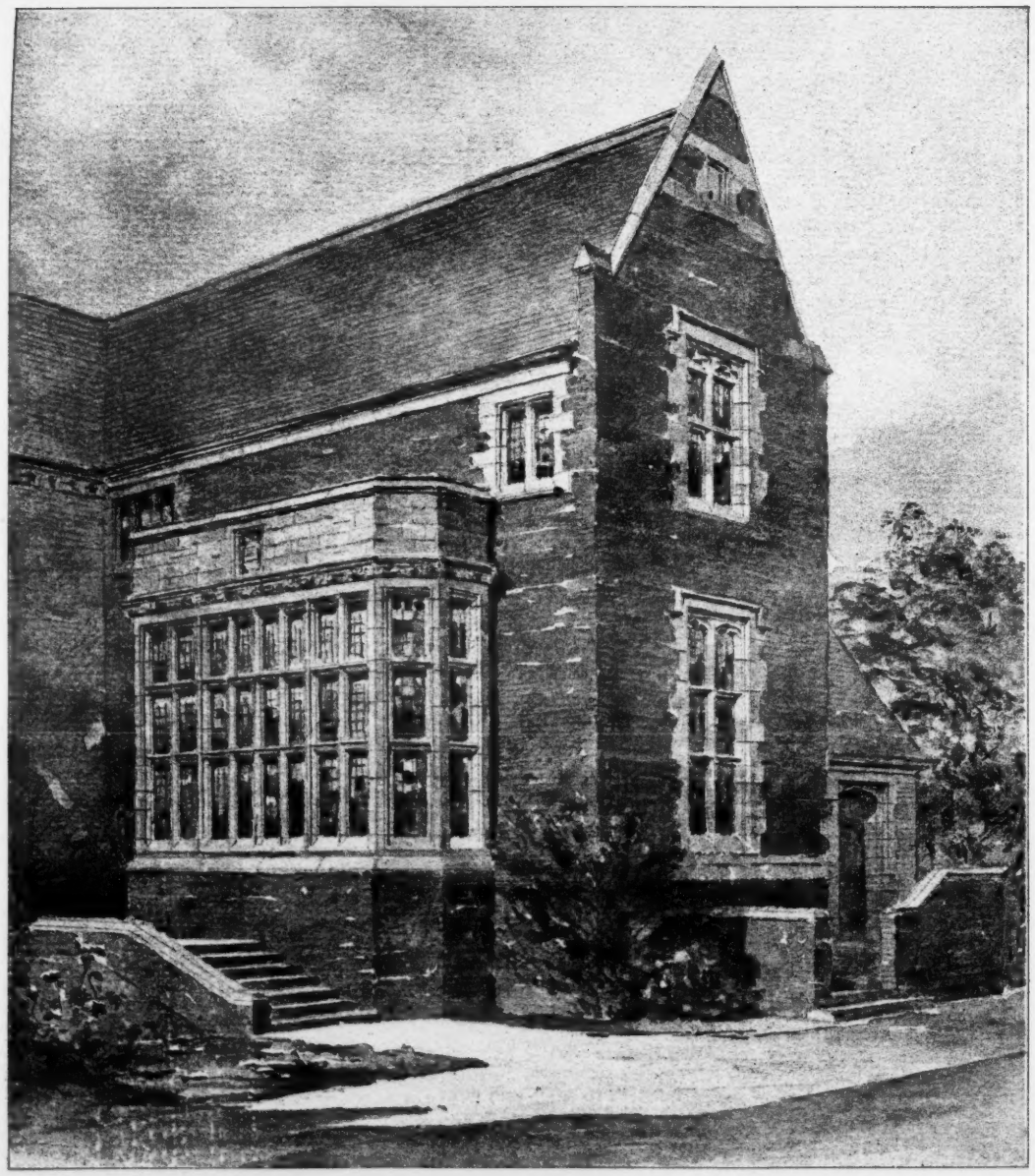

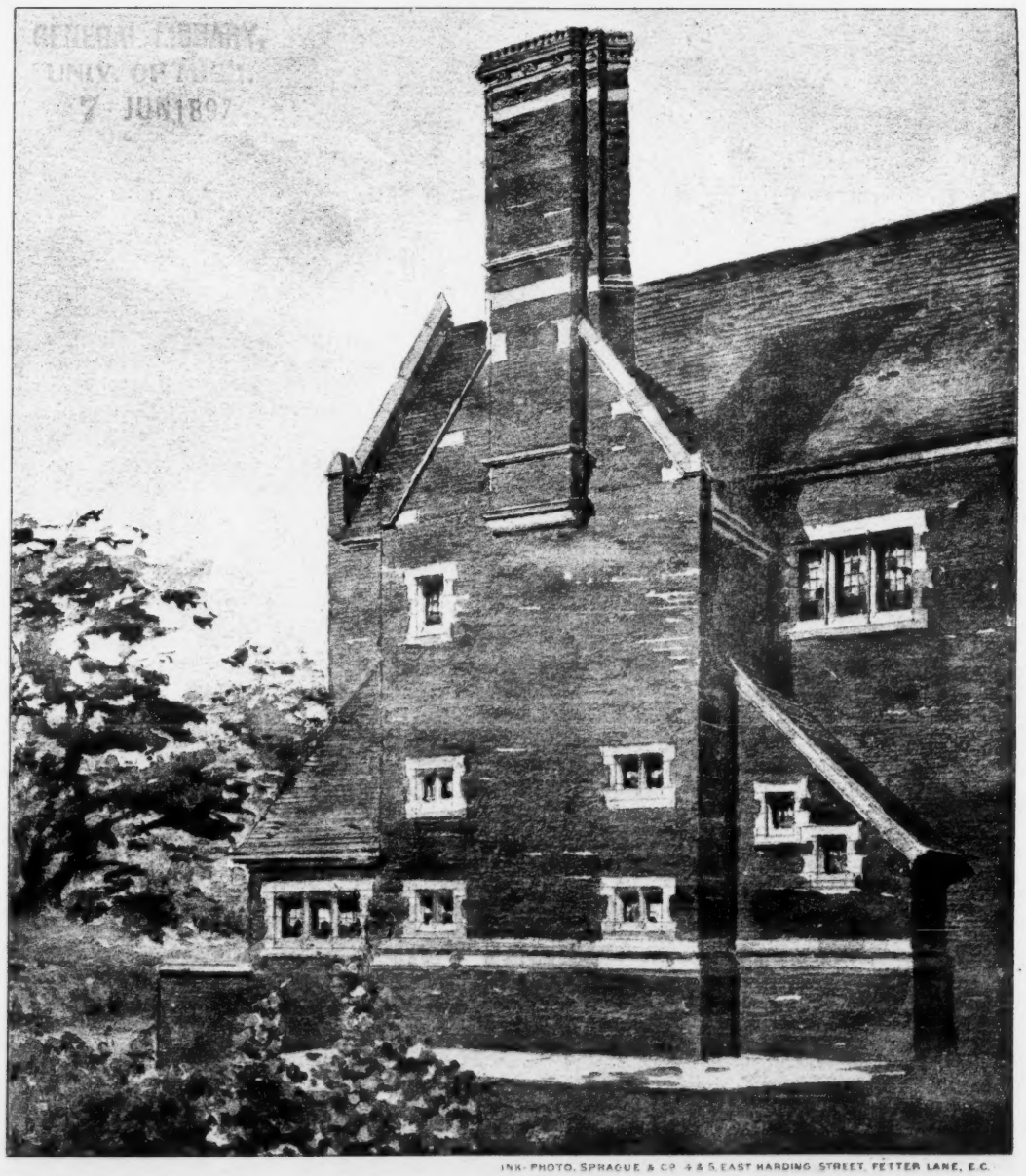

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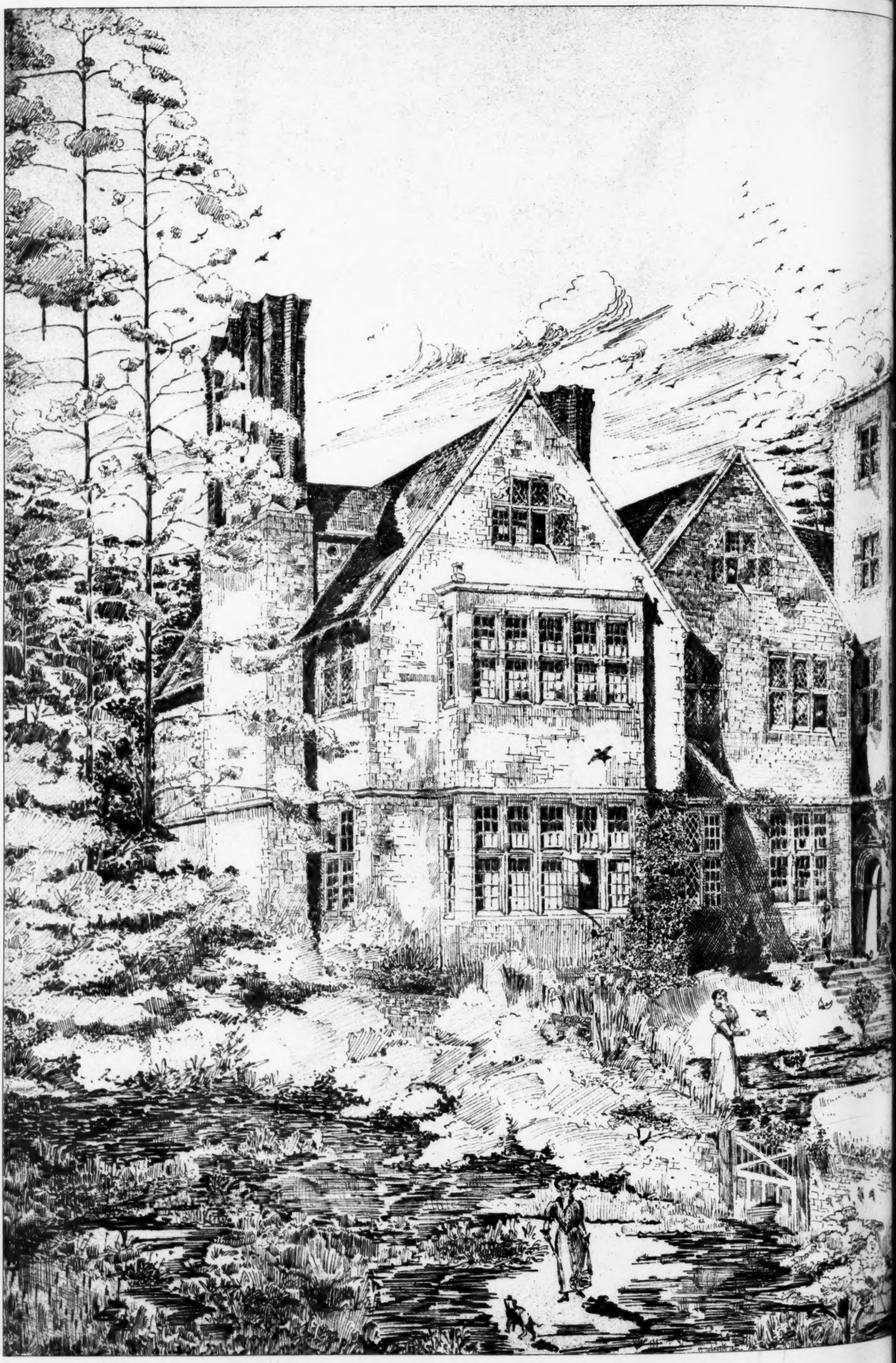

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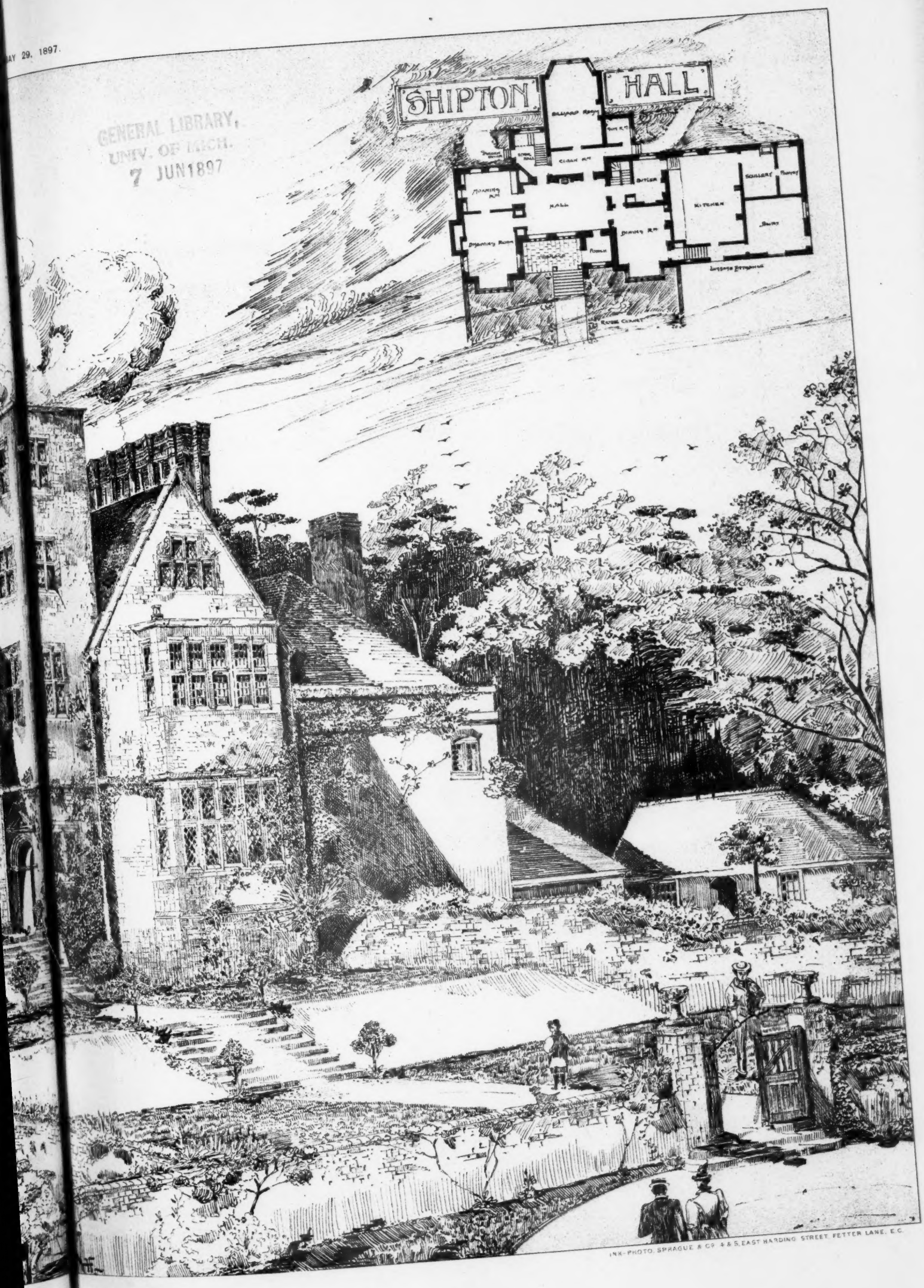

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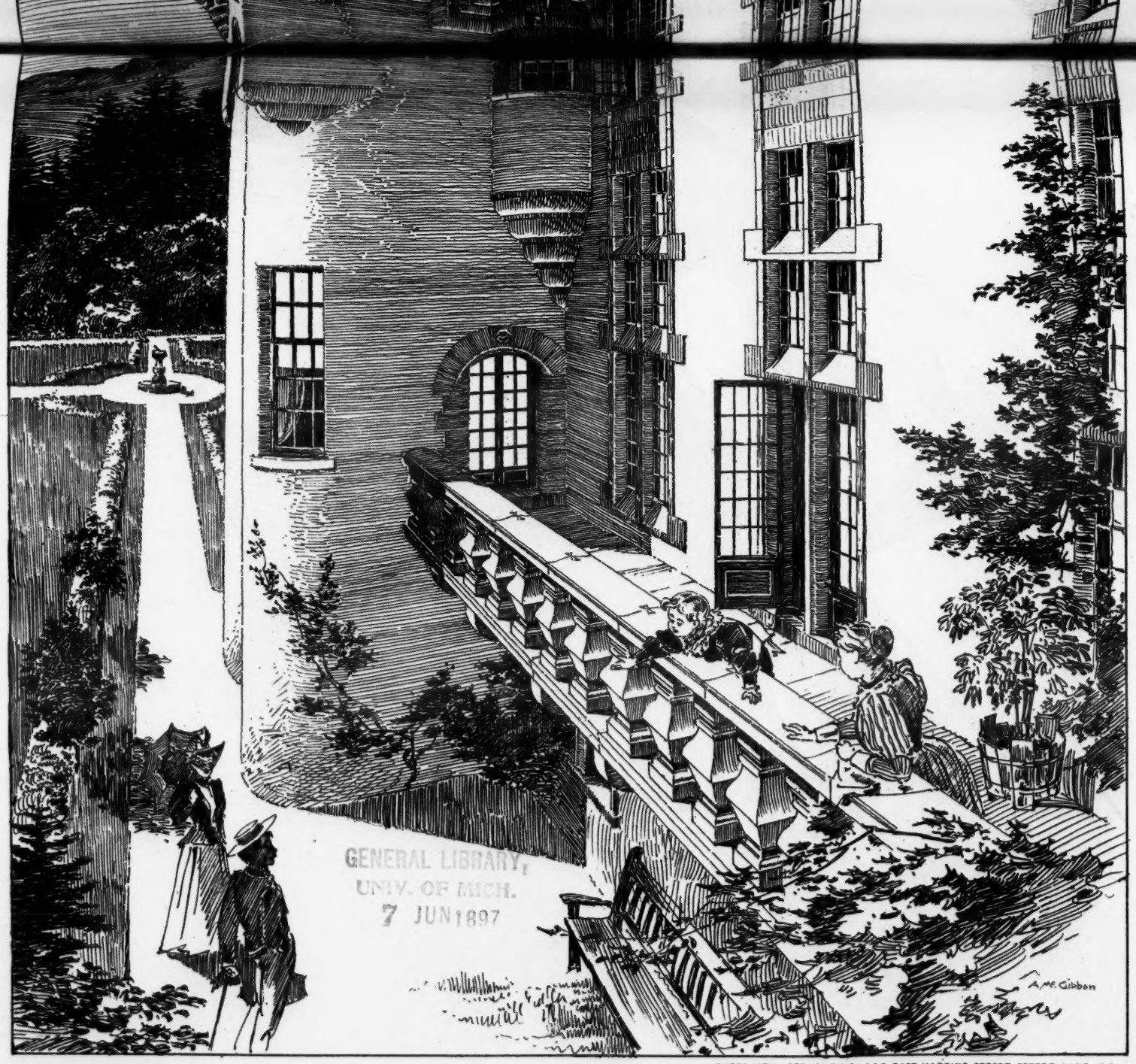

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